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POISON IN OUR AIR

United Steelworkers of America

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National Air Pollution Control Administration

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POISON in our AIR

AIR POLLUTION CONFERENCE

UNITED STEELWORKERS OF AMERICA

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and the
National Air Pollution
Control Administration,
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UNITED STEELWORKERS OF AMERICA

NATIONAL CONFERENCE

ON

AIR POLLUTION

In Cooperation With

National Air Pollution Control Administration

Tuesday and Wednesday
March 25 and 26, 1969

MAYFLOWER HOTEL
WASHINGTON, D. C.

TELEGRAM
TO
CONFERENCE

TO: JOHN J. SHEEHAN
Legislative Director
UNITED STEELWORKERS OF AMERICA

FROM: ROBERT H. FINCH
Secretary
HEALTH, EDUCATION AND WELFARE

I REGRET THAT THE EXTREMELY HEAVY DEMANDS ON MY TIME, PARTICULARLY WITH REGARD TO APPEARANCES BEFORE VARIOUS COMMITTEES OF THE CONGRESS, MAKE IT IMPOSSIBLE FOR ME TO JOIN YOU AT THE CONFERENCE ON AIR POLLUTION SPONSORED BY THE UNITED STEELWORKERS OF AMERICA IN CONJUNCTION WITH THE NATIONAL AIR POLLUTION CONTROL ADMINISTRATION. YOUR CONFERENCE IS AN IMPORTANT FIRST IN ITS FIELD. THE QUALITY OF OUR PHYSICAL ENVIRONMENT DESERVES THE ATTENTION AND CONCERN OF ALL PUBLIC-SPIRITED GROUPS, INCLUDING LABOR UNIONS. I AM GRATIFIED THAT YOU ARE DEVOTING A SPECIAL MEETING TO EXPLORING THE PROBLEMS AND PROSPECTS IN THE STRUGGLE FOR CLEANER AIR AND A MORE LIVABLE ENVIRONMENT.

I REGRET THAT I CANNCT BE WITH YOU AND I WISH YOU WELL IN YOUR IMPORTANT DELIBERATIONS.

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FOREWORD

Clean Air—just plain clean air—that's what the Air Quality Act is all about. And that's what the first steelworkers' National Conference on Air Pollution is all about.

Between these covers are reprints of the various presentations to the conference made by professionals in the field of air pollution programs across the nation.

The United Steelworkers of America is appreciative of the assistance provided by the National Air Pollution Control Administration of the Department of Health, Education, and Welfare in making the conference meaningful. We are sincerely hopeful that a continuing effort by union members will help the nation achieve the goal of clean air. It is only through local action—pressure—that results will be accomplished in proper air quality management.

The destruction of our environment by toxic pollutants must be stopped before it is too late. The tools for doing that job are at hand. It is hoped that the conference and the reprint of its proceedings will emphasize the fact that environmental destruction is already out of hand. It is truly later than we think.

THE OFFICERS

I. W. ABEL
WALTER J. BURKE
JOSEPH P. MOLONY

CHAPTER ONE
Concept—A Clean Environment

1. POISON AIR—AN INTRODUCTION

John J. Sheehan, *Legislative Director*
UNITED STEELWORKERS OF AMERICA

It is my profound pleasure to welcome you to the first Steelworkers' conference on the problems of air pollution. Environmental hazards have been growing at such a rapid rate that it is no wonder that man is trying to escape the earth's atmosphere and seek greener pastures—or should I say cleaner air pastures—beyond this planet.

I think that it is also logical that we should have our first conference here in Washington, because it is here that an effective legislative response was made to the demands of an aroused public which was being daily attacked by gross environmental insult, the levels of concentration of which were causing grave discomfort and financial loss, and the toxicity of which were slowly poisoning our population. Many of the chemicals that pollute our air are known to be highly toxic—even lethal when inhaled in large amounts over a short period of time—sulphur oxides and carbon monoxides are familiar examples.

Moreover, we are uncertain as to what are the long-term effects of exposure to low concentrations of these substances 24 hours day, seven days a week, for years on end. Hence, an aroused people and a responsive government have called for a halt to the destruction of the environment.

I hope you will begin to realize, as a result of this conference, that an aroused public has to fight vigorously and emotionally to bring about relief. The first real legislation came in 1963. It took another four years before a more effective federal law was enacted. Even this law has grave compromises in it. But it is a tool where no tool existed before. This conference is designed so that you might study its features and evaluate its ability to produce results.

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The conference, therefore, will point to lessons in legislative activity (and, I might say, political activity—or, in some cases the lack of it) and the lessons in the implementation of the laws which—and I stress this point—which are not self-initiating.

The jurisdiction of this conference extends to the conditions producing pollution of the ambient air. That is a word to which you will hear frequent references. It is the air which surrounds our communities and our regions. It is the air upon which we *as citizens* depend.

I make this reference to ambient air because there is another category of air about which we *as workers* are greatly concerned. For the want of another term, we should call it *occupational* air. Like the public's attempts to change the quality of *ambient* air, our struggles have been long. The recent events over pneumoconiosis—or black lung—in coal miners is another example of many other similar conditions. Our Union has already testified about lung cancer among uranium miners. But, unlike the public's efforts for some degree of pollution control, our attempts to obtain federal legislation—namely, the Occupational Health and Safety Bill—have so far failed.

Our conference today concerns ambient air quality. And what we learn here in terms of procedure and in terms of scientific evaluation of pollution will produce immediate results for our communities and provide the groundwork of a coalition for occupational air quality.

I, therefore, wish you success as we now begin the work of this National Conference on Air Pollution.

2. A UNION'S OBJECTIVE—BETTER QUALITY OF LIFE

I. W. Abel, *President*
UNITED STEELWORKERS OF AMERICA

I must say that I am extremely pleased to see this remarkable response from every district of our Union to attend a conference on air pollution. To my knowledge, this is the first national air pollution conference held by a major industrial union.

Your attendance today indicates your concern over the impairment of the public's health and safety as a result of the pollution of our environment. As workers, who are employed by the metal making industries, we are of course personally involved because in many cases our various plants are the greatest cause of air pollution in our communities.

But, we are also consumers of air—the health of our families and our friends is dependent upon the quality of that air. There is no longer any doubt that air pollution is a hazard to health. An aroused public has now begun to demand that the cost of doing business cannot be at the price of the public's health. We are all familiar with the air pollution tragedy in Donora, Pa. in 1948 when 43 percent of that city's population became sickened and 20 people were killed during a four-day siege from polluted air. Just recently in 1963, 400 people died in the city of New York when the atmospheric conditions, which caused inversion, prevented the pollutants from being dispersed.

There are estimates that more than 145 million tons of garbage are pumped into the atmosphere annually, which according to the *Times* magazine, causes over $11 billion of damages each year. In 1967 the Public Health Service declared that there were some 7,300 communities in the United States which have major pollution problems. In testimony before a Senate Committee, John Middleton, Director of the National Air Pollution Control Administration, indicated that there were 20 areas out of 65 metropolitan areas having an industrial population of 40,000 or more which were having "most severe air pollution problems." I think it would be well for me to mention them to you because most of you live there and work there. These 20 areas are grouped into three severity categories:

The five areas having the most severe problems:
Chicago, Cleveland, Los Angeles-Long Beach, New York and Philadelphia;

The five areas whose problems rank second in severity:
Boston, Detroit, Newark, Pittsburgh and St. Louis;

The ten areas whose problems rank third in severity:
Akron, Baltimore, Cincinnati, Gary-Hammond-East Chi-

cago, Indianapolis, Jersey City, Louisville, Milwaukee, Washington and Wilmington.

All these areas are suffering from high concentrations of either particulates, sulfur oxides, hydrocarbons, carbon monoxide, or photo-chemical smog. In many cases it is a combination of these pollutants.

The astounding and unbelievable destruction of the atmosphere is dramatized when one realizes that the air is no longer free. The supply of clean air is no longer *free* from pollutants and access to clean air for breathing is no longer free because it is now costing the community millions of dollars to purify it. It is estimated that there are 2½ million tons of clean air for each person. But according to an article in the *Saturday Evening Post*, people become uncomfortable and sick for lack of each man's requirement of 30 pounds of clean air per day. Imagine that—with the vast resource in the atmosphere some of us are unable to have access to only 30 pounds.

Each year industry discharges to the atmosphere:

2 million tons of carbon monoxide
9 million tons of sulfur oxides
2 million tons of nitrogen oxides
4 million tons of hydrocarbons
6 million tons of particulate matter

A disturbed public has now demanded action. There are those in the Congress, like Senators Muskie and Nelson, who have channeled that demand into effective legislation. Prior to 1963—in other words, prior to legislative action—industry took only minimal steps to arrest the growing menace. During the last 17 years the steel industry spent only a little more than $19 million a year on what it termed as "non-revenue producing equipment." Well, the industries of America must accept a greater responsibility for the public welfare even though it cannot be measured in terms of profits.

As a matter of fact, total industrial response has been accelerating since 1963. Industry has spent approximately $900 million on various aspects of air pollution control since that time.

This expenditure includes both research and development monies as well as capital improvements for specific control devices. Starting with an outlay of only $60 million in 1963, this figure was projected to reach $140 million in 1968.

The public also is paying—not only in terms of impaired health and financial losses due to pollution, but also in terms of cash outlays to combat pollution. State and local governments are spending about $50 million a year, in addition to the tax expenditures resulting from the fact that industry can take a seven percent tax credit for the installation of pollution abatement facilities. It is no wonder then that the public is demanding a product—namely, "breathable" air.

You have often heard the expression, "Everybody speaks about the weather but nobody does anything about it." Well, we are here today to do something about it—at least that part which is manmade. Concerning the purposes of this conference and your presence at it, I should like to make a few brief remarks.

1. In-Plant Safety and Health

Our safety and health committees have been constantly concerned about the level of injurious elements contained within the plants and mines. Many times, however, they have been unable to obtain redress of the grievances. For this reason, we have vigorously supported the Occupational Health and Safety Bill. Now, however, there is an enlightened public concern about conditions *outside* of the plant. If coke-making facilities and electric furnaces, for instance, are now judged to be an evident danger to the health of the community, how much more so are they a threat to the health of the workers within the plant.

Neverthless I do not think that an aroused public and an alert government will stop at the achieving of air quality in the environment *outside of the plant* when workers within are being subjected—in many cases—to higher concentrations of toxic elements than the public even was. Conditions in our mills and mines—especially uranium mines—demand immediate relief. Our members in the areas of the coke ovens are succumbing to many respiratory diseases. I was therefore somewhat amazed when

the American Iron and Steel Institute testified last year in opposition to the Occupational Health and Safety Bill. In their statement they claimed:

> "Today the steelworker is much safer on the job than he is off the job. . . . Practical operating managers know that in connection with a wide variety of grievances stemming from a change in job, change in temperature, or change in crew size, safety and health are frequently *alleged merely* to build up a case. If the Federal government has responsibility in the area, it may very well be called in in thousands of grievances which are now satisfactorily resolved either between employee representatives and management or by resort to arbitration. Provision of this kind of authority in the Federal government would tempt many an employee representative to boost his stock by calling on the Federal government, since the very presence of a Federal inspector could be used to demonstrate his importance and influence."

Well this is a very poor argument against the necessity to provide health standards in the polluted atmosphere of the plant in which there are high concentrates of particulates and sulfur oxides.

Learn your lesson, therefore, from this conference—that legislation is difficult to achieve and much more involved to enforce. But it is possible to control our environment. Our efforts to bring about a better ambient air quality will not be in vain.

The impact of strong emission standards to control industrial pollution will, therefore, have a positive impact upon the health of the worker. Let me hasten to add, however, that many pollution problems within the plant will still remain to be solved because the scope of the act extends only to the ambient air quality of the community and not to "occupational" air quality of the plant or mine.

2. Community Representatives

While it is true that you are delegates from various industrial plants, you are in a truer sense representatives of your

various communities. I make this statement for a number of reasons. First of all, air pollution in your communities is the result of many industrial pollutants. It can be controlled only through a coordinated plan encompassing all the plants in the area.

Secondly, and most important, the Air Quality Act of 1967 places a great deal of responsibility in the hands of the local community. While the Federal government does reserve to itself the right to issue emission standards, its initial action is limited to describing the quality or characteristic of the air which is injurious to health. It is up to the local community in that particular air quality control region to determine what kind of emission standards will be placed upon the various plants.

3. Role of Participation

As a result of this conference it is hoped that you will become familiar with the terminology and procedure of the Act. Only after you have a fuller knowledge of the law will you realize the crucial role which you can play in your community. Once a community is designated as an air quality control region it must establish anti-pollution standards. The type of standards will depend upon you. Those who are the cause of the pollution will also participate in the formulation of the standards. If you do not participate, then the standards may well be determined not by the breathers of the air in that community but by those who have a vested interest in the industrial facilities.

4. A Bridge—Not a Buffer

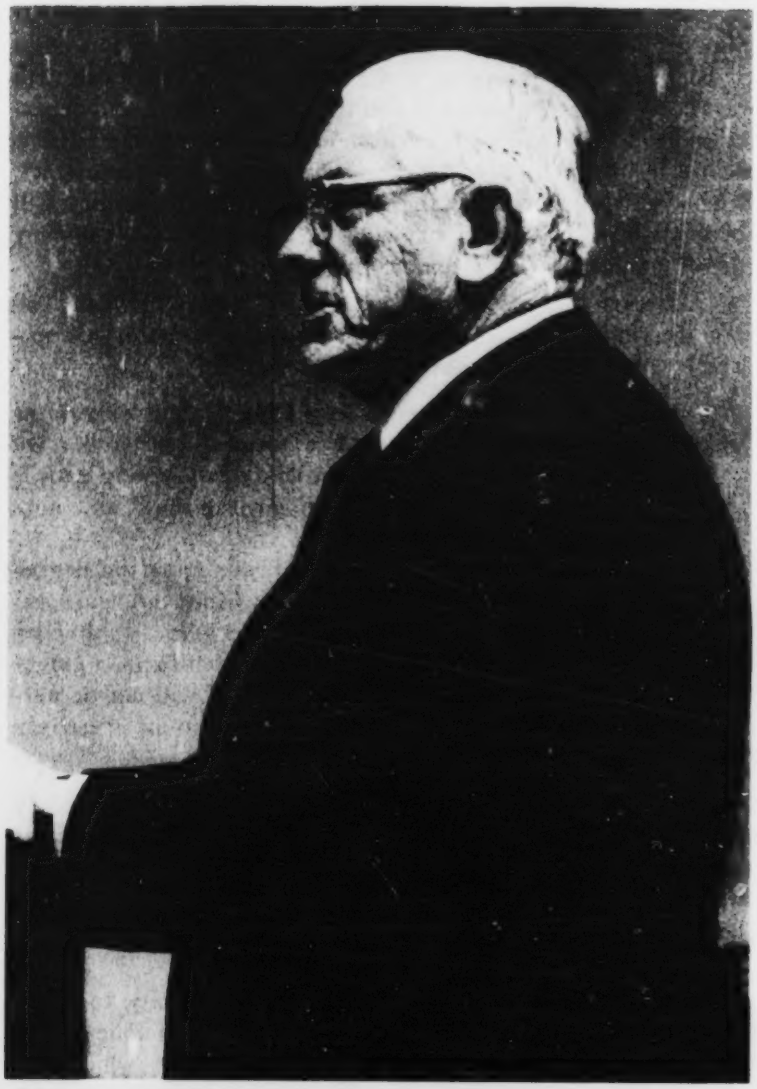
Your role as a consumer of air can be even more crucial for the community because you may well be the *bridge* between the community and the plant in the sense that you actually work in the plant. The community may well be influenced in the type of standards it recommends by your attitude about and desire for safe air.

Actually, the community will be engaged in what I might describe as a collective bargaining process with its various industries in an attempt to arrive at an agreement—namely, emission standards which would guarantee a certain quality of air. These

emission standards bear a price tag—the cost of the installation of abatement facilities. As a union, we are well aware that any collective bargaining contract has a price tag also but that does not deter us from negotiating one. So also we must not be deterred from negotiating a clean air contract.

Let me carry this analogy of collective bargaining one step further. Union contracts are never negotiated for the purpose of driving a company out of business, even though there are times at which management claims that that possibility is imminent. Neither will the enforcement of emission standards cause economic ruin or relocation since they will be based upon economic and technological feasibility. In the course of the conference you will become aware of these limitations and, hence, not be swayed by arguments back home that air quality standards cannot be achieved. The standards, even though there is a price tag to them, will be achievable because they will be within the technology available.

I wish to emphasize that point. Just as management should not run for cover when emission standards for the control of pollution sources are mandated for the protection of the health of the community, so also the citizens and workers should not give up the fight because it may be said that to have industry and jobs means we must have pollution. *Pollution can be controlled. It is not an academic or idealistic goal. It is a practical obtainable objective well within the realms or reasonable technology and economic cost.* There need not be any *practical* conflict between action to insure the protection of public health and welfare and the economic growth of a particular industry or plant. The federal presence in the form of the Air Quality Act of 1967 assures that the state and local governments will not be overwhelmed—as they were in the past—by this false dilemma. This, then, is the core reason your Union called a national conference on air pollution. *We refuse to be the buffer between positive pollution control activity by the community and resistance by industry.* While the security of our jobs is not the price which will be paid for aggressive abatement activity, the ruination of our health may well be the risk which will be taken for the lack of action.



I. W. ABEL, ***President***
United Steelworkers of America
"A bridge not a buffer to clean air"

One final point I will touch upon. The Air Quality Act gives the state and local governments the right to develop a clean air contract. But this right is not self-initiating—no more than was the Wagner Act provisions on the right of workers to organize and collectively bargain. Action must be taken by the citizens themselves through public hearings and advisory committees. Otherwise, the parallel to the early days in union history will result in—namely, control standards on a par with the company agreements negotiated by company unions.

Whether this particular approach will succeed will depend upon the vitality of what is today known as "participatory democracy." Senator Muskie has well expressed it:

> In this legislation, as in legislation dealing with water pollution, we have established a national policy, but we have placed the primarily responsibility for dealing with it at the state and local level, both governmental and non-governmental.
>
> Whether or not it succeeds depends upon the degree of commitment and cooperation we get from state and local government, from industry, from the citizen. . . . But let me also make clear that referring a responsibility to state and local government today must not and will not be permitted to mean what it did years ago—a way of effectively killing public action in a problem area.

If this approach fails then we can have no other recourse but to national policy, national agencies and national enforcement. Hence, I emphasize the importance of union participation in public hearings on air quality standards and implementation plans especially in states where air quality regions are established.

This conference, therefore, is your opportunity to learn about a new type of collective bargaining for the public health and welfare. The community clean air agreement, which will evolve, may well depend upon your knowledge about and aggressiveness for an unpolluted atmosphere. Not only may the type of clean air agreement depend upon your response to this conference—but your own life may depend upon it.

3. FEDERAL LEGISLATION—A BLUEPRINT FOR ACTION

Dr. John Middleton, *Commissioner*
NATIONAL AIR POLLUTION CONTROL ADMINISTRATION
(HEW)

I am very pleased to be here this morning and to have this opportunity to discuss with you the Federal program for restoring clean air to the Nation's cities and towns.

I know that many of you have mixed feelings about the growing effort to bring the problem of air pollution under control, that you are torn between, on one hand, the desire for a cleaner and healthier environment, and, on the other, fear of the economic impact of air pollution control.

I submit that the way out of your dilemma is to get involved and stay involved in the fight for clean air.

If I had to express in one sentence my advice on what to do about air pollution, that sentence would be: "Don't leave it all to the experts!"

And if I could add a few more sentences, I would say to each of you: Find out about the harmful effects of air pollution on your own and your family's health and welfare. Find out about the ways to prevent and control air pollution today and tomorrow.

Force the experts to put things in their proper perspective. Naturally, neither air pollution nor any other problem of environmental contamination can suddenly be eliminated without disrupting the economy.

But who ever said that the job can be and has to be done overnight? Air pollution is, of course, a serious problem, and if not controlled, it can only grow, worsen, and become a critical problem.

There is no time to spare.

There is no time for a leisurely effort.

But there is still time for an orderly attack on the problem, provided we act now. The key words, I repeat, are "provided we act now." That is all that the Air Quality Act requires—

that we act now, use the best tools available today, and provide for the best possible use of the tools of tomorrow.

To explain to you how the Air Quality Act is intended to work, I think it best to begin by outlining the basic premises on which the Act is built.

They are:

First, that the prevention and control of air pollution at its source are primarily the responsibility of State and local governments, and,

Second, that the role of the Federal government is to provide leadership and assistance in the creation of effective air pollution control programs at the State and local levels of government.

In other words, the Air Quality Act provides a national plan for a cooperative attack on air pollution by Federal, State, and local agencies, industry and labor, scientific and professional groups, and the general public.

The Act sets up a system designed to insure that air pollution will be controlled in accordance with the best available scientific and technical knowledge, and it calls for an accelerated effort to expand and improve that knowledge.

You know, I am sure, from your own observations, that air pollution is essentially a regional problem, that neighboring cities and suburbs can and often do pollute each other's air, or, more accurately, that they contribute to, and are affected by, pollution of their common air resource. Thus, the extent to which air pollution is controlled—or not controlled—in a city can and often does affect air quality in its suburbs, and vice-versa.

For this reason, control of air pollution on a regional basis is a necessity, and under the Air Quality Act, it will become a reality.

To provide a geographic framework for regional control of air pollution, the Act calls on the Department of Health, Education, and Welfare to designate *Air Quality Control Regions*.

This we have begun to do, in consultation with State and local officials. Air quality control regions have now been designated in the metropolitan areas of Washington, D.C., New York, Chicago, Philadelphia, Denver, and Los Angeles. In the weeks

and months ahead, regions will be designated in such other places as St. Louis, Boston, Cincinnati, San Francisco, Pittsburgh, Cleveland, Buffalo, and many other metropolitan areas.

I said a moment ago that the Air Quality Act is intended to pave the way for control of air pollution in accordance with the best available scientific and technical knowledge. Providing that knowledge is also the job of the Department of Health, Education, and Welfare.

Knowledge of the harmful effects of air pollutants is being provided in the form of *air quality criteria documents*. These documents summarize what has been learned through research about the ways in which air pollutants threaten human health, soil and damage materials, injure plant and animal life, reduce visibility, and, in general, impair man's well-being and degrade his environment.

Knowledge of ways to prevent and control air pollution is being made available in the form of *reports on control techniques*, which provide information on the availability and applicability of such techniques and on their cost and effectiveness.

Thus far, we have issued air quality criteria documents and reports on control techniques for two important types of air pollutants—the sulfur oxides and particulate matter. Sulfur oxides are gases that reach the atmosphere primarily from combustion of coal and residual fuel oil. Particulate matter comes from fuel- and refuse-burning and a wide array of industrial processes, including, as I am sure you know, the manufacture of steel.

The next steps in carrying out the provisions of the Air Quality Act are up to State governments. They are expected to set air quality standards for places included in air quality control regions. They are expected to set such standards for those pollutants for which air quality criteria and reports on control techniques are issued.

In setting an air quality standard for a pollutant, a State is defining an air quality goal in terms of a desired limit on levels of that pollutant in the air. And at the same time, the State must indicate approximately how long it will take to reach that air quality goal.

As part of the process of setting air quality standards, States must hold public hearings. There is, in my opinion, no other step as important as these public hearings.

It was clearly the intent of the Congress that State governments, in setting air quality standards, take into consideration the desires of the people who live and work in the air quality control regions. The public hearings will provide an opportunity for expression of those desires.

Three months ago, I had the pleasure of hearing Senator Edmund Muskie speak at a New England conference on air pollution. Senator Muskie, as you know, was one of the principal architects of the Air Quality Act. I would like to quote, in part, the thoughts he expressed on the urgency of broad public participation in the operation of governmental machinery for dealing with a problem such as air pollution.

He said, and I quote: "We must revitalize the idea that public policy is not only the product of public agencies, but of the private sector and of individual citizens, not only on election day, but on a day-to-day, week-by-week, month-by-month basis, as citizens gather, as leaders in the private sector meet to consider what they will or will not do to promote the public welfare."

In addition to setting air quality standards, States must adopt explicit plans for implementation of the standards. An implementation plan must include specific requirements for the prevention and control of air pollution and a timetable for achieving compliance with those requirements. An implementation plan also must include provisions for interim action to curtail air-polluting activities on those occasions when movement of the air is so slight that pollution may reach levels which will pose imminent danger to people's health.

Air quality standards and implementation plans must be submitted to the Department of Health, Education, and Welfare for review. If they are approved, the way is then clear for States to begin translating their plans into action.

If a State fails to set air quality standards, or if its standards cannot be approved, Federal action can be taken to insure the adoption of appropriate standards. Federal action can also be

taken if a State fails to follow through on its plans for implementation of an air quality standard.

That, very briefly, describes the mechanism established by the Air Quality Act for dealing with air pollution on a regional basis.

I feel sure that by now you're wondering how all this will affect the steel industry. I will try to answer that.

The steel industry, as I am sure you know, is scattered among some 300 communities in 38 States, but most of the Nation's steel is produced in about 20 large metropolitan areas. By the end of 1969, the majority of those 20 areas will be included in air quality control regions.

In those regions, sulfur oxides and particulate matter will be the first groups of air pollutants for which States will have to adopt air quality standards and plans for implementation of the standards.

Steel mills are, of course, among the largest industrial sources of particulate matter, and so it will be the States' programs for the prevention and abatement of particulate emissions that will most directly and significantly affect the steel industry.

The first step that States will be taking is to establish air quality standards for particulate matter. Air quality standards relate to the general level of a pollutant in the air, rather than to the amount coming from any source of that pollutant.

It is my view that States ought to establish air quality standards which, based on current knowledge of the harmful and undesirable effects of air pollution, appear to be adequate for the protection of public health and welfare. I am saying, in other words, that air quality standards ought to represent meaningful goals, even though it may take several years to reach them.

In that way, the real purpose of attacking the problem of air pollution is kept in sight at all times instead of being obscured by consideration of what can or cannot be accomplished right now or next month.

In this scheme of things, the timing of steps toward reaching an air quality goal is an important factor. From your standpoint, it may be the most important.

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No one can promise you that air pollution control will be painless. Taking steps to deal with this problem will cost money. That money will come out of industry's pockets, out of consumers' pockets, and out of taxpayers' pockets. It will be money for which other uses could undoubtedly be found.

Exactly what the economic impact of these expenditures will be will depend very heavily on their timing. And in deciding on the timing of the steps that will be required of industry, States must take into account the availability and cost of techniques for dealing with air pollution.

Action to bring air pollution under effective control cannot be indefinitely delayed or prolonged. That would clearly thwart the purpose of the Air Quality Act, and, more importantly, it would frustrate the American public's expressed desire for a speed-up of the national attack on air pollution.

State governments will not be expected to reach their air quality goals overnight. But they will be expected to adopt timetables which call for increments of real progress on a year-by-year basis. This can be done, I assure you, without slowing down the Nation's economic growth and without compromising the national goal of full employment.

The Air Quality Act puts all of us on notice that we must carefully consider the ramifications of every step that we take to deal with air pollution—and every step that we do not take.

The Act says that we must take steps not only to restore clean, healthful air in those places where the problem of air pollution is already serious but also to prevent the problem from reaching such magnitude in those places where fresh air is still available.

On the other hand, the Act reflects an awareness that air pollution is a by-product of many of the activities which sustain our modern way of life. One of them, of course, is the manufacture of steel. The Act says that we must prevent and control air pollution without disrupting those activities.

All of this is, perhaps, easier said than done, but doing it is indeed possible, provided that all the partners in this enterprise, including government, industry, and labor, work together constructively. I urge you to make this meeting a stepping-stone

toward positive action to help deal with the very serious problem of air pollution.

Your efforts will pay for themselves many times over. Not only will you be helping to provide a healthful and wholesome environment for yourselves and your families, though that alone would make the effort very worthwhile; you will also be helping the steel industry make a significant contribution to the Nation's social progress. That contribution will surely earn for the steel industry the same high degree of public recognition that it already gets for its many important contributions to the Nation's economic progress. In short, joining the fight for clean air is in your own best interest.

4. FUTURE FOR CLEAN AIR

Honorable Gaylord Nelson, *U.S. Senator*
STATE OF WISCONSIN

As a boy growing up in a small town in northern Wisconsin, I fell in love with the out of doors—of which we seemed to have so much back in Clear Lake. To a boy, the trees seemed wondrously tall, the hills seemed very high, the waters seemed deep and pure, and the wildlife seemed magically mysterious.

It came as a shock to learn that these wonderful features in our great out of doors were all being threatened by the very progress which we had been taught in school to anticipate with such great expectations. It seemed impossible that anything done by man could actually destroy that wide world of nature. But I have been seeing it happen every day since then.

The biggest thing of all in this world outdoors was the sky. It was the sky I always thought of when they first taught us the meaning of infinity. It was the open air we always wanted to escape into. Who could have foreseen the day when man would be on the verge of turning the very air we breathe into poison? But that is the problem we are faced with today, a problem we would never have dreamed of ten or twenty years ago.

Partly because of my background the urgent need for preserving some significant part of our world of nature has preoc-

cupied me throughout much of my service as a state legislator, as Governor, and as a United States Senator.

Through the past decade of work in this field, I have come to the conclusion that the No. 1 domestic problem facing this country is the threatened destruction of our natural resources, and the disaster which would confront mankind should such a destruction occur.

Air pollution is just one part of the massive threat which faces our resources, all across the country and all around the world. The same powerful forces which create the crisis of air pollution are also threatening our fresh water resources, our woods, our wildlife, and the scenic beauty of the nation. These forces are the rapid increase in population, industrialization, urbanization, and scientific technology. It is now entirely conceivable that these forces set in motion by man will prove so powerful and so irreversible as to destroy the natural environment we have known in the past, and even to threaten the future of life on this planet.

More than any other public problem with which I am familiar, the threat to our natural environment poses a challenge to our system of self-government. There is a real question as to whether this nation, which has spent some 200 years developing an intricate system of local, state and Federal government to deal with the public's problems, will be bold, imaginative, and flexible enough to meet this supreme test. Our governmental system survived two World Wars. But will it be adequate to cope with our own hell-bent drive to destroy our resources?

Before we talk about what we must do to control air pollution, let us just review for a moment what government has already done—or at least what it has allowed to be done—to our environment.

In northern Wisconsin, and in much of the nation, we destroyed our forests. Our own northland once had 200 billion board feet of white pine, one of the greatest concentrations of wealth anywhere in the world. We wiped it out in an eyewink of history and left behind 50 years of heartbreak and economic ruin. Forest fires raged through the slash left behind by the loggers. Crystal clear trout streams silted in. Hundreds of

thousands of acres of land became tax delinquent, and local units of government faced economic chaos.

Then we destroyed our rivers. Our cities and our developing new industries converted many of them into sewers, killing their fish, ruining them as a recreational resource, threatening the health of those who use them as a water supply. At present we are destroying our lakes. Our small inland lakes are being ruined by overdevelopment and by septic tanks, and our mightiest bodies of water such as the Great Lakes are being slowly and steadily destroyed by municipal, industrial and shipboard wastes. Lake Erie is almost gone, Lake Michigan is severely polluted, and Lake Superior, the third largest body of fresh water in the world, is on the way.

Stripminers and bulldozers are destroying our natural landscape. Pesticides, now being used at the rate of 700 million pounds a year, are spreading all across the land and the water, poisoning the soil, killing fish and wildlife, and posing a potential threat to human health. DDT is being found in reindeer and in penguins and its concentration is soaring as it progresses up the food chain—from water, to plants, to fish, to birds and presumably to man.

And now the very air we breathe! Our factories, our automobiles, our public incinerators and our homes are filling the air with noxious gases and dangerous particles of pollutants at a terrifying rate. Automobiles alone are discharging enough carbon monoxide to pollute a blanket of air 400 feet thick, six miles wide, stretching from New York City to Los Angeles. Our coal burning furnaces alone are discharging enough sulfur dioxide to pollute a similar blanket of air, 400 feet high and from coast to coast, 15 miles wide.

Thousands of deaths have officially been traced to air pollution, and many thousands more were almost certainly caused by it. Polluted air is causing or aggravating bronchitis, asthma, emphysema, and lung cancer. It is making people more susceptible to pneumonia. It is making it hard for elderly persons to breathe, and it is interfering with the delicate systems by which the human body filters out irritants and makes use of the vital

ingredients in fresh air. It is making it difficult for pilots to see the ground as they fly into our greatest cities.

Our scientists tell us that air pollution does some $10 to $12 billion damage every year. It damages farm crops as much as 100 miles from the source of the pollution. It blights pine trees, kills orchards, damages orange groves and grapevines and ruins spinach. It corrodes metals, weakens fabrics, discolors paint, etches glass, cracks rubber, and spreads its filth over everything. It turns white snow black, and it soils wash on the line before it can even be worn. These are the things we can see with our eyes, breathe with our lungs and feel with our hands. But up there in the once blue sky, concealed behind a blanket of smog, things are happening which no average person can detect.

Scientists note that man is now burning fossil fuel at an ever increasing rate, and that it is probable in fact that more than half of the fuel ever burned by man has been burned in this century. This is possibly setting the stage for the worst disaster ever faced by the human race.

Dr. LaMont Cole, a Cornell University scientist, testified recently before Congress:

> "The only reason the earth's atmosphere contains oxygen for us to breathe, and with which to burn fossil fuels, is that oxygen is constantly being given off by green plants. If we reach a point at which the rate of combustion exceeds the rate of photosynthesis, the oxygen content of the atmosphere will start to decrease. Almost a year ago I made an intense effort to estimate how near we are to the balance point which will signal the end of expansion, of our present type of industrialization, but satisfactory data of the necessary sort do not exist. I suspect that we are close to the critical point, but I shall not try to defend this opinion."

What we do today and in the very near future to protect and enhance the quality of our environment—in our cities and suburbs as well as in rural America—may well determine the fate of future generations.

We have made some recent beginnings toward making "progress" work for, rather than steadily against our better

future. At the national level, the Water Quality Act of 1965, the Clean Water Restoration Act of 1966, the Clean Air Act of 1965, and the Air Quality Act of 1967 are examples. Citizen action inspired the passage of these acts. Thousands of individuals and organizations let their Congressmen and Senators know that America could not continue to tolerate the increasing filth being poured into its rivers and into its air. Congress acted. The passage of the air and water pollution control acts was but one example of what the concerned citizen has accomplished in this decade to begin a new era of conservation in our nation's history.

There have been predictions recently of a taxpayers' revolt. Perhaps that will happen. I think, though, that a revolt over the fouling of our environment and of our own lives has been brewing for a long time, and it has unleashed a national concern that is more potent than any other source of support we could possibly tap.

Now, we are going to need to direct a little bit of that citizen energy to make the Air Quality Act work. Dr. John Middleton, director of the Federal air pollution control program, described the opportunity and the need well last year: "I think the Air Quality Act of 1967 gives the concerned citizen a tool and a means of effectively influencing the quality of the air where he lives that we have never had before."

The clock has been set running by the recent Federal issuance to the states of criteria for two of the most important types of air pollutants, sulfur oxides and particulate matter, and by the Federal selection for designation of 57 air quality regions, involving parts of all 50 States. Now, under the provisions of the Air Quality Act, it is up to the States to respond. For instance, those States and Federal jurisdictions involved in already designated air quality regions, California, Colorado, Illinois, New York, Pennsylvania, and Washington, D. C., are now under deadlines to declare their intent to set standards in their air quality regions to control the pollutants covered by the first Federal criteria, and to hold public hearings, and actually adopt standards, and to adopt plans and schedules to implement and enforce the standards.

The public hearings were written into the act to assure that the public would have its say in restoring clean air. You can be sure that those whose concern isn't clean air, but profit, will speak their piece at every turn in the standard setting and enforcing process. In fact, I predict if there isn't well informed, well organized, and continuous citizen representation at the public hearings, and at the State Legislatures, the city councils, and the meetings of the State pollution control agencies, we will not get effective air cleanup standards, but blank checks for more pollution, and the Air Quality Act will never get off the ground.

The goal is clear. The States must set standards which will be satisfied not by excuses but by clean air. Deadlines must be set for polluters to act, and if these deadlines are not met, polluters must be taken to court, as the act provides.

You will hear protests, time and again, that the cost of cleanup is prohibitive, and that if an industry is forced to put up the price, it will have to go out of business, and cut off wages and jobs. The fact is, air pollution control is a minor part of the considerations a plant must be concerned with in its location and operating decisions. It is doubtful if there is a single plant that has had to move because of a stiff air pollution control standard. I might add that when the standards are completely in effect, there will be no place to move to, because the standards will cover all the air regions of the nation.

You can plan on an intensive effort for at least the next two or three years. By mid-1970, some States should be well on the way to implementing standards set under the Air Quality Act. That is just a start, of course. The standards must be set, implemented, and enforced for air quality regions from one end of the nation to the other. After that, regular followup will be essential.

Finally, let me make note of the fact that if a national air pollution control program is to succeed, Congress and the Administration have a continuing responsibility, particularly with regard to providing adequate funding to carry out the provisions of the program, which include aid for research on pollution control technology, grants to State and local air pollution control agencies, and funding to enable the National Air Pollu-

tion Control Administration to carry on its work. Our record in this regard must be better in the future than it has been in the past. For instance, in fiscal year 1969, Congress authorized $185 million for the program, but appropriated only $88.7 million leaving a gap between authorization and appropriation of $96.3 million. This demonstrates again the crisis of priorities which this nation continues to face. We may be willing, on the one hand, to begin deployment of a costly new weapons system such as the anti-ballistic missile, while on the other, we continue to low play our commitment to meet the ever increasing threat to health, to the economy, even to our survival, that is building in our environment.

If we calculate our losses to air pollution at $10 to $12 billion a year, would it not be worth some sizeable portion of that amount to conquer it?

But most important of all is our basic approach to all these threats to our environment. We must see them all as part of a common phenomenon with potentially ruinous consequences for our civilization. For 200 years we have plundered the resources of this continent, thinking that there always would be plenty more where they came from. That is no longer true. Just as we have completely destroyed many species of wildlife, we now have it within our power to destroy our rivers, our Great Lakes, and even the air we breathe.

As Dr. Sidney Galler of the Smithsonian Institution testified before the Senate Interior Committee:

> "Throughout the history of the world various nations have risen and fallen in accordance with overexploitation and deterioration of their resource bases. If we are to avoid the same pitfall, we must provide a scientific foundation for conservation, development and effective use of our resources. It is essential to our survival as a nation to take effective action on these problems."

We need a broad new program of Federally supported ecological research. With our resources gradually disappearing, with our capacity to destroy the environment growing every day, we must know the impact on our environment of every step we take from now on.

We must know in advance that wiping out forests destroys the soil, ruins lakes and streams, even affects the climate and causes some agricultural crops to die. We must know that digging a canal to the ocean can emit the lampreys and wipe out our lake trout fishery. We must know that phosphates in detergents will fill our lakes with fast growing algae.

If we are to do these things—if we are to save the natural resources of this land to sustain ourselves and future generations—then we must begin at once to develop the governmental programs and institutions which will accomplish that life or death goal.

5. ENVIRONMENTAL CRISIS

C. C. Johnson, *Administrator*
CONSUMER PROTECTION AND ENVIRONMENTAL SERVICES
(HEW)

I am happy to be here with you this morning to join very briefly in your discussions.

I am delighted to take this opportunity to commend the United Steel Workers of America for their concern with the problem of air poilution. I consider it a fine example of public-spirited participation in a matter which profoundly affects all citizens. The problem of air pollution typifies the environmental dilemma in which modern man finds himself—a dilemma which becomes more apparent with each year that passes.

Our generation, and those of our parents and grandparents have lived by the optimistic philosophy of the Industrial Revolution that every problem of mankind could be solved if we simply gave free rein to our ingenuity, and made the maximum application of technology to the problems of production.

Now, in our own time, we are finding that an abundance of goods is not all that is necessary to man, and that the unquestioned benefits of technology are accompanied by some very real and unwelcome byproducts. Every year, pollution gets worse, rather than better; the problems of insuring safe food, drugs, water and a variety of consumer products are increasing; the quality of American life, particularly urban life, is deteriorating

in a morass of environmental problems so complex as to appear almost beyond remedy.

If we are to have a life worth living, and if we are to bequeath to our children a world in which they too can find satisfaction, we are going to have to adopt a new and more sensible view of our ultimate goal. Certainly the purpose of all our strivings is the *total* welfare of man as a consumer as well as a producer.

We are often reminded that it will cost money to control pollution and, unfortunately, these costs can usually be expressed in clear and impressive terms. We should remember that the costs of an unwholesome environment are infinitely greater.

We are going to have to pay the price for cleaning up our rivers, lakes and streams—or we will soon have waters that defy purification, and our children and our children's children will pay an even greater price—in currency more precious than dollars.

If we want pure food and drugs, we must pay the price for testing and inspecting—or pay for our heedlessness in human suffering.

We can have clean air, if we recognize that the price we must pay is far less than the *cost of dirty air*—and that cost, as I am sure you know, is easily reckoned in terms of *destruction* of crops and materials, as well as in terms of human disease and comfort.

We are an adventurous people, and we are always drawn to the distant frontier while we find it easy to close our eyes to the unplowed field that lies in front of us.

We are challenged by the potential miracles of organ transplants—a thrilling but costly investment in human health.

We have willingly spent billions of dollars in space exploration.

Believe me, I do not question the value of these explorations whether they be in space or in medicine—but I am reminded, and I think our generation needs to be reminded, of that old proverb: "A man gazing at the stars is at the mercy of the puddles on the road."

Certainly our progress in meeting human needs has been great, but it has been uneven and our failure to come to grips

with our consumer and environmental problems has surely been a blunder.

Let me, very briefly, review for you just a few more of the problems that demand our attention:

The use of food additives to impart flavor, color, or other qualities has increased 50 percent in the past ten years, and each of us now consumes an average of three pounds of these chemicals yearly. Pesticides leave residues on food crops, and traces of veterinary drugs occur in meat, milk and eggs—all this in addition to the chemical barrage that reaches us from other parts of the environment.

Over two million Americans are stricken with illness each year from microbiological contamination of food; increased use of "convenience" foods requiring little or no heating in the home complicates this problem.

Solid waste management is unfortunately well on its way to becoming a major environmental problem of our time, if it has not already reached that dubious distinction. Our Bureau of Solid Waste Management has recently compiled new data as a part of its National Community Survey requested by the President's Science Advisory Committee. These new figures defining the magnitude of this problem are, to say the least, staggering—far higher than the estimates that have been accepted in the past. The Survey shows that right now, the amount of household, commercial, and municipal wastes discarded every year totals 360 million tons. Added to this are 110 million tons of industrial wastes, 2 *billion* tons of agricultural wastes, and 1.1 *billion* tons of mineral wastes. Do you want to know what your individual shares are? Seventeen tons a year, or about 90 pounds per day for every man, woman and child in the United States.

Every year, more than 500 new chemicals and chemical compounds are introduced into industry, along with countless operational innovations; thousands of workers suffer from cancer, lung disease, hearing loss, dermatitis, or other preventable diseases because industry, unions, and government at all levels have failed to give really adequate attention to occupational hazards.

Much of the drinking water available in our Nation's communities is of [illegible]wn quality. There are over 19 thousand

SENATOR GAYLORD NELSON (Wisconsin)

"Thousands of deaths have officially been traced to air pollution"

communities whose public water supplies serve 58 million people which are not covered by U.S. Public Health Service standards. About 750 community water supplies serving about 92 million people are covered, but the standards themselves need updating, particularly with regard to the chemical contaminants.

Accidents—many of them involving hazardous products—take the lives of 100,000 Americans every year and injure 52 million more. Some 3,000 deaths occur every year from accidental ingestion of poisons—most of these among children.

Radiation as an environmental hazard is a growing threat to ours and future generations which we have barely begun to understand. Radiation sources are now to be found throughout the environment. They range from the large-scale applications of nuclear energy, particularly in electric power generation, through laser and microwave technology in industry, to the use of radionuclides and X-rays in the healing arts and the use of microwave ovens and other electronic equipment in the home. And our scientific protection against radiation is at a beginning stage of development.

The world clamors for the thousands of new miracle drugs which our pharmaceutical research produces to treat specific disease problems. Yet in spite of our best efforts at testing, labeling, and other controls, they often produce unforeseen side effects and may even offer sinister genetic threats. What these new chemical formulations mean in terms of the total chemical barrage to which modern man is exposed is an area we have not even begun to explore.

Scientists have pointed out for years the hazards of our heedless and random manipulation of the ecological system. As a Nation, we have been slow to understand, and even slower to act. Today, we have reached or are rapidly approaching a crisis situation.

The environmental crisis that the Nation faces today cannot be considered as a "health" problem in the narrow sense of the word. Nor are there solutions to the problem on which it is easy to pin a price tag. What we are talking about is the total well-being of man—his physical and mental health, his economic, social, and cultural well-being. We need to recognize that all

these are intertwined. We devise various systems and subsystems to maintain ourselves on the planet—systems of economics, transportation, education, agriculture, etc. Our goal, obviously, is that all should contribute to the total welfare of the citizens they are designed to serve.

Yet we have built cities which people now find unlivable; we have built "high-speed" highways on which "high-speed" cars move bumper to bumper at horse-and-buggy rates; we have built an industrial system that has given us affluence never before seen in the world—and that pollutes the very air and water that give us life—we are about to land a man on the moon, and have not yet figured out what to do with the growing mountains of refuse that litter our countryside.

The problem of our time is certainly not to choose between industrial production and clean air, between abundant food production and water unpolluted by pesticides and fertilizers, between nuclear energy and safety from radiation hazards. The problem is to assure that we have both. We need to put our technology to work against the very problems which technology has itself created.

Some people have compared the earth to a spaceship on which man must carry all his needs for his own and all future generations needs. We need to make sure that "all systems are go" on this spaceship or we run the very real risk of destroying the very resources that are most important to us. We are an affluent society. We *can* afford to have the full benefits of our technology, including a decent environment. We cannot afford *not to.*

The fact that you have come here to discuss this important problem is indicative, I think, of the keen concern for air pollution control which is felt throughout the Nation today. It is one of many signs that our society is ready to make the decision for clean air in place of dirty air and for preserving a decent environment for themselves and for their children.

CHAPTER TWO
Program—Government Regulations

1. STATE RESPONSIBILITIES

Alexander Rihm, Jr., *Assistant Commissioner for Air Resources*
NEW YORK STATE DEPARTMENT OF HEALTH

I appreciate very much this opportunity to participate in your meeting today and to discuss the developments which have occurred in New York State's air quality management program, particularly as these may relate to the iron and steel industry.

A few weeks ago I was asked, and I agreed, to participate in writing the history of environmental sanitation in New York State. While digging back through some of the old State Health Department reports, I came upon some interesting facts relating to air pollution. In 1880, the newly organized State Board of Health proposed a model sanitary code for cities and towns. This model code contained the first specific reference to air pollution control in New York State's history. Section 1 of that code read as follows: "Whatever is dangerous to human life or health, whatever building, erection or part of a cellar thereof is overcrowded, or not provided with adequate means of ingress or egress or is not sufficiently supported, ventilated, sewered, drained, cleaned or lighted, and whatever renders the air or food and water or drink unwholesome are declared to be nuisances and to be illegal." Section 5 of that 1880 code read as follows: "No tanner, refiner, or manufacturer of gas, starch, leather, chemicals, fertilizer, or of any product whatsoever shall fail to use the most approved and all reasonable means to prevent the escape of smoke, gases and odors." It went on further to say that "No person or company shall maintain within the limits of (any) city or town, any manufactory or place of business dangerous to life or detrimental to health or where offensive or deleterious odors, gas, smoke, deposit or exhalations are generated without the permit of the Board of Health."

In putting together my material for the environmental sani-

tation history, it was obvious that developments in air pollution control occurred during three, approximately equal, 30-year periods. I think in general that this statement holds true for the United States as a whole. I chose to call the first of these periods the "Smoke and Smell Era," during which time people were primarily concerned with effluents as an esthetic problem. The second period I've labeled the "In-Between Years," when a more sophisticated understanding of the effects of air pollution developed. For instance, in 1904, the first allegation was made that air pollution caused adverse health effects and damage to vegetation. From this beginning, specific and documented evidence of the true cost of air pollution began to accumulate, leading, as could be expected, into the third and current "Action Era." This period begins with the birth of air resource management programs and the maturing of those infants is my subject today.

It's difficult to imagine that this immense earth does not have an unlimited air supply; but this realization is finally sinking in and has led to the modern era of air resource development. The 1948 Donora, Pa. episode probably did more than anything to awaken the public from their apathy about air pollution. For the first time, the public was convinced that air pollution would have deleterious effects on their health if allowed to go unchecked. Perhaps even this would have been not enough to keep the public interested, if it were not for subsequent events—the London episodes in 1952 and 1956, and the reported killing smaze in New York City in 1953. These events convinced people that if something wasn't done, these death-dealing episodes would continue to happen, and what's more, could happen to them.

While there still remains a minority opinion that the problems of environmental control have been blown out of proportion, I am convinced that the majority of this nation's leaders recognize them as a major concern. If there is a divergence of opinion among those charged with the responsibility of controlling the discharge of wastes to our environment, it does not rest upon the feeling that the job should not be done, but rather upon ideas of how it shall be done.

Let me talk a minute about some basic legal precepts in air

resource management, to set the scene for what we are doing in New York State.

Historically, the law recognizes the right of men to use and enjoy their property as they see fit. This theory of property law, however, works in two directions; for if a man has the right to use his property as he wishes, he also has the right to be free from any occurrence which limits that use and enjoyment. Thus, where more than one property is involved, each owner has the right to use his as he wishes, but is always subject to the identical right in other property owners. It is said, for example, that "nuisance" is a definition of a dividing line between the right of an owner to use his property as he so desires and the recognition of that right in another.

Another general concept is recognized in law. This is the police power of the State—the power given to the government to balance various individual rights and, for the common good, to regulate the day-to-day interplay of society's activities. Because of the millions of rights involved, the government has the power to restrict all of our rights to guarantee their reasonable use and enjoyment for the benefit of all. There is, however, a limitation to the police power which must always be considered when dealing with any question of general concern. The government may only exercise this power after considering all factors involved and may regulate only to the degree necessary to reasonably protect the general public and the orderly operation of a community.

New York State's Air Pollution Control Law and the administration of its program is based on these legal premises. In fact, these appear in a declaration of policy in the law itself which states: It is New York State's policy ". . . to maintain a reasonable degree of purity of the air resources which shall be consistent with the public health and welfare and the public enjoyment thereof, the industrial development of the state, the propagation and protection of flora and fauna, and the protection of physical property and other resources, and to that end to require the use of all available practical and reasonable methods to prevent and control air pollution in the state." It is further

declared that ". . . this can be done most effectively by focusing on goals to be achieved. . . ."

As an essential first step which, we feel, must be taken in any air quality management program, the Air Pollution Control Board established standards for air quality so that it could define objectively when a nuisance exists. Going back to the matter of property rights which I mentioned a few minutes ago, these standards define the line between your right to use your property as you desire and your neighbor's right to do the same. There is a very significant statement in the Air Quality Standards which reinforces this principle. It reads: "It is the intent of the Board to evaluate attainment of ambient air quality standards on the basis of avoiding an adverse effect on a receptor." Let me emphasize the words "adverse effect on a receptor." For example, contaminant concentrations in the atmosphere can exceed the standards providing there is no adverse effect on the receptor, or "nuisance." Furthermore, if you examine the New York State Air Quality Classifications Standards System, you will note that the definition of "nuisance" will vary, depending on the classification assigned to an area. It's a concept recognized in our State Air Pollution Control Law, a portion of which reads as follows: ". . . the Board shall give due recognition to the fact that the quantity or characteristics of air contaminants or the duration of their presence in the atmosphere which may cause air pollution in one area of the State, may cause less air pollution or not cause any air pollution in another area of the State. . . ."

As some of you may know, the New York State Air Pollution Control Board adopted its first standards system in 1964 and later amended it in 1968. Under the present system, any specific area of the State can receive one of five classifications, and varying sets of air quality standards are set for each classification. We refer to the classifications as levels.

So far as is known, each air quality standard which has been adopted, if achieved, will protect the health of the people. This goes for Level 5 as well as for Level 1. I must keep emphasizing this, because it is one fact which has been frequently misunderstood as we have classified areas in our State. Such statements have been made as: "We don't want to have standards

for air quality which will be dangerous to our health." Our answer is, emphatically, that all air quality standards, for all levels, assure air that is safe to breathe.

But air pollution may cause economic and social damage, even though the standards are such that they will protect the public health. For instance, people go to the mountains and lakes for recreation and to enjoy the scenery. If the air in these areas was not kept up to the highest degree of purity, the recreational value of the region would be ruined. Economically and socially, the area would suffer.

On the other hand, people gain their livelihood by working in industry and in commerce. If air contaminant standards were so strict that commerce and industry found it uneconomical to operate and had to close down, people would be out of work and we would create so-called urban deserts. Between these two extremes, of course, there are varying shades of gray; levels at which compromises can be made. In these intermediate levels we can have good economic and social conditions and yet have cleaner air than we could in the very heavily industrialized communities.

It is in the area of social and economic factors, rather than those of health, where the real problems arise when it comes to setting air quality standards. Frequently, reliable data is lacking upon which sound judgments can be based.

Let's look now at the other legal precept I mentioned before —the police power of the State, or the balancing of individual rights for the common good.

Maybe I can best express our State policy in regard to the exercise of the State's police power by saying that we feel ambient air quality standards can best be achieved through the application of best known technological controls on all sources. The degree of such control can be tempered, in our opinion, only to the extent of maintaining a viable economy without sacrificing a healthful, comfortable and enjoyable environment.

At this point, we get down to talking about the control of individual sources, and having spoken to groups such as yours before, I reach the point where your ears should begin to perk

up. I know you are asking: "How is the resource management program going to affect me or the plant in which I work?"

To answer this question fully, I must first explain that air resources management involves the control of sources other than industry. While industrial sources do contribute a significant share to air pollution, they are by no means the only source of air pollution. We categorize our sources into five groups: transportation, primarily motor vehicles; industrial; fuel combustion; solid wastes disposal; and natural.

Our program in New York State has been designed, with one exception, to deal with all of these sources—the exception being the control of natural sources of pollution. This problem is presently being studied and we feel that, evenutally, we can do something about it.

To illustrate that we are doing something about all of these groups of sources and to show the scope of our program, let me briefly review some of the rules which have been adopted or which will be adopted in the near future.

In 1962, our Board took steps to prevent new air pollution. It required, from then on, that anyone proposing a new installation or a major modification to an existing installation must apply for and obtain a Permit to Construct. This relates not only to industrial emissions but also to such things as incinerators, public and private, and combustion installations.

Another rule has been adopted which, with certain exceptions, prohibits open burning throughout the state. This has had a great impact in the solid wastes disposal field. No longer is it acceptable to maintain an open burning dump, nor for that matter, to burn leaves on the street or in the backyard. No one can any longer heap his wastes in a pile and touch a match to it.

Visible smoke emissions from stationary combustion sources are covered by still another regulation.

Incinerators, both public and private, have had strict limitations placed on the amount of materials which they can discharge to the atmosphere.

Rules have been adopted limiting the allowable sulfur content in fuels and also regulations for the amount of particulates

that can be discharged from fuel burning installations have been officially proposed.

A general rule governing the discharge of industrial contaminants is in effect. This rule applies to all industrial effluents, except where it has been found that a particular type of industry is unable to reasonably or practically comply with limitations. Special rules which supersede the general industrial rule were adopted for these industries. For instance, we have special rules governing jobbing foundries, by-product coke ovens, and for kiln emissions from cement and lightweight aggregate plants. We have rules governing emissions from motor vehicles, including smoke emissions from Diesel engines.

I think you can readily see that air resources management encompasses a broad field—not just the control of industrial emissions.

Now I can go on to answer your question of how air resources management will affect you or your plant. Let's first discuss how it's going to affect you.

Of course, you realize that the effect on each individual is going to vary, so I am forced to talk in generalities and orders of magnitude. But I do think that I have enough facts at my disposal for the point which I would like to make.

It has been said that living with air pollution costs each and every one of us $65 per person per year in terms of increased laundering, increased painting bills, increased corrosion and other damage. It has been shown in New York State that cost per person can range upwards of $350 per year down to less than $30 per person per year. But, nevertheless, $65 is probably a fairly good average figure to use for the basis of my argument, even though I am reasonably certain that this cost is actually higher.

We've had a fairly complete economic survey made of the costs associated with air pollution control. On the basis of this economic study, annual estimated "compliance" expenditures in New York State will range in the future between $137 million and $228 million per year. On a per capita basis this works out, using the high figure of $228 million per year, to $13 per capita per year. How many of you would be willing to spend $13 to

get $65 in return? Perhaps I need say no more, but there *is* a more important factor on which a monetary value cannot be placed; namely, our health. Assuming we have compliance, for a maximum of $13 per person we have bought peace of mind about the air we breathe and assurance that contamination will not reach levels where our health will be adversely affected.

Now let's talk about the plant in which you work.

As far as we can tell, on the basis of the data which we were able to unearth, the probable annual expenditures for air pollution control and abatement in New York State as of December 31, 1967, were at the rate of approximately $54 million per year, of which $31 million was being spent by utilities and $5½ million by the steel industry. To obtain complete compliance with our regulations will require an estimated yearly expenditure by the steel industry of $8.34 million, or a 50 percent increase over present spending.

To put it another way, $3 million more per year will have to be spent by the steel industry in New York State to control air pollution to acceptable levels. Compare this, if you will, with an $80 million increase to control automotive emissions and an $82 million increase to effectively dispose of solid waste in accordance with present regulations. I am not trying to say that $3 million is not a significant amount, particularly since it is being paid by a small number of plants, but it is small in comparison to the amount of money which must be spent to bring other types of sources into compliance.

We have explored the economic impact of air pollution control on industry in our State quite deeply, and I don't think we can be accused of embarking on air pollution control programs without some idea of what the end result will be. Our consultant has furnished me with a preliminary report on his two years' work and perhaps it might be well to summarize for you a few things which we now know.

The steel industry is reasonably well dispersed throughout our country. The primary production areas are located in the States of Pennsylvania, Ohio, Indiana, Illinois, Michigan, and New York. In 1967, raw steel production—ingots and castings —in these States accounted for 95.1 million net tons, or 74.8

percent of the total. Pig iron production in the same States amounted to 67.7 million net tons, or 77 percent of the 1967 total.

On a national level the iron and steel industry—"blast furnaces and basic steel products" — accounts for 3.3 percent of employment in over-all manufacturing. On the New York State level, the industry employs approximately 36,500 workers of a total manufacturing payroll of 1.9 million workers and two percent of all manufacturing employees.

In 1967, New York State's contribution to total production consisted of 6.2 million net tons of pig iron and 7.3 million net tons of raw steel, or about seven percent and five and three-quarters percent, respectively.

Substantial profits have not been a part of steel's picture for a number of years and may be presenting the industry with a problem of considerable magnitude. In 1966 and '67, steel's return on net worth ranked 39th out of 41 industries included in the all-manufacturing return. The industry has problems. To mention a few: imports, productivity and, ultimately, prices.

Domestic producers appear to be well ahead in the productivity race, but there is no question that wage rates paid by United States producers are well above those being paid abroad. Before you jump all over me, let me say that I make this statement only to indicate that wages are a factor. I am not being critical of our present wage rates nor indicating that they are too high or too low.

In summarizing his portion of his economic report on the steel industry, our consultant summed up by saying that productivity and prices in the steel industry have lagged behind manufacturing as a whole, but wages have not.

Pollution control at the end of 1967 was costing the steel producers approximately $1 per ton of steel produced in New York State. This $1 was broken down as follows: depreciation on installed equipment—20 cents; maintenance on installed equipment, labor, power, parts and supplies—79 cents; and miscellaneous—1 cent.

In 1967, the percentage allocation of monies for control equipment plus operating costs in the steel making industry in

New York State broken down as follows: 22.1 percent of the air pollution control dollar went to control emissions resulting from preparation of raw materials; 17.3 percent for the control of emissions from blast furnaces, including sintering plants; 59.4 percent for the control of emissions resulting from steel making; and 1.2 percent for the control of other emissions.

The percentage of pollution abatement expenditures—both air and water—to total capital expenditures for all industries on a national level for 1966 averaged 1.69 percent. Among durable goods industries, the average percentage rose to 1.97 percent and in non-durable goods averaged 1.40 percent. For the nonferrous metals producers, the average was 3.76 percent and the iron and steel companies averaged 3.23 percent for control equipment. Since the primary iron and steel industry expenditures for air and water pollution control are nearly equally split, the average percentage for air pollution control equipment in the industry is about 1.6 percent.

In 1968, the steel companies in New York State had a capital investment in air pollution control of approximately $21 million. This represented a little more than two percent of total plant capital investment. Based on present projections, capital investment in air pollution control will rise to approximately $40.7 million in 1973.

We have been very fortunate in having generated and maintained good relationships with industry in our State. Back in the 1950's, when our air pollution control law was being drafted, industry representatives cooperated with government in the formulation of the law. One of industry's representatives was from steel.

We have been assisted in many cases by special industrial committees in the formulation of our rules, and I think I can say without equivocation that we have always been able to find a common meeting ground which was suitable to us and, I think, to industry, in accordance with the concept of air quality management.

We have worked with and helped industries through some trying times, rather than acting in an arbitrary manner. I can point to two specific instances which occurred in the steel indus-

try in New York State. In one case, an exception from a rule for a limited six-month period was requested to allow time to study the economics of a new steel making process. The trial proved successful and the net result was more jobs, rather than a loss of jobs and, incidentally, we ended up with good control.

In another case, an emergency occurred in another company's plant which would have thrown people out of work, but this was solved by issuing a special exemption to an order to allow the use of some uncontrolled furnaces until the damaged equipment could be repaired.

I would like to stand here today and say that we would never take any action which would interfere with employment in New York State. I am sure you would like me to say this too. Unfortunately, I cannot predict what the future has in store for us. I can only assure you that we do have an interest in maintaining a viable economy in New York State and in improving that economy. Assuredly, I don't want to be accused of being a bureaucrat who ruined the economy of New York State. But we do have a mandate from the people to use every reasonable and practical means to bring about a healthful, comfortable, and enjoyable environment by improving our air resources.

In conclusion, I would like to say that it has consistently been our policy to acquire all available information relative to industry, or other areas where action is necessary, before taking or requiring the needed remedial action. While final decisions may not always be favorable or well liked, they will be made in full consideration of the facts, and we will continue this approach in the management of our air resources.

2. LOCAL RESPONSIBILITIES

John Fairweather, *Air Pollution Control Officer*
SAN BERNARDINO COUNTY AIR POLLUTION CONTROL DISTRICT, CALIFORNIA

Air pollution in the urban centers of the nation is basically a result of our population growth and the industrial, commercial and residential development necessary to serve. Together with

the activities of people we have the peculiarities of inversion layers over many geographically surrounded regions causing the effluents put into the atmosphere to be trapped under a lid of hot air. Thus our industrial, commercial and residential activities are making our air resources a receptor, an airborne sewer and dictating that the protection and preservation of our air and water resources, and prevention of our burying ourselves in our own domestic trash and wastes, is perhaps the major domestic problem facing all levels of government today.

Air of acceptable quality is now recognized as a natural resource, an environmental factor establishing a limit on community activity as precise as are the requirements for land and for water. We must live with the air and water supply we have, conserve its use, prevent its contamination and protect its quality if we are to insure the continued health and happiness of a public dependent upon a physical environment representing an adequate proportion of air, land and water.

Science and engineering have classified the air pollutants as aerosols, the smoke, fumes, dusts and mists; and the gases or specific contaminants.

Legislation has developed on Federal, State and local levels to establish a basis for enforcing control measures. However, just passing laws doesn't make things happen. The laws must be effectively implemented—somebody has to do something if the intended benefits is to accrue.

Inherently the public has demanded government take the initiative in matters concerned with health, welfare and safety. That is perhaps as it should be: for it is not the responsibility of government to do for the people those things they are not willing to do for themselves, but rather it is government's responsibility to do for the people those things that could not otherwise be done. Thus, if we are to insure that the proper political-governmental decisions are made for the preservation of our air resources, we must foster cooperation and competition of ideas and performance between government, business, labor, and the individual.

We must foster cooperation and competition of ideas, for debate is essential in order that an airing of divergent opinions

can bring into focus those courses of action best exemplifying the attitudes of all concerned.

Basically the Congress has delegated control measures to the State and local governments in the Air Quality Act. However, through the abatement provisions set forth in the 1965 act, and through the provisions for establishment by HEW of criteria for specific contaminants, criteria for control, and for the right of review of State's plans for action, we face a bit of an anomaly. You will recall the old Bibles, where the words spoken by the Lord, are printed in red. This puts the local control official in the position that he's not sure whether his board, the State or the Federal entity has been the spokesman.

The 1967 National Air Quality Act, the California Air Resources Board of the same year, and similar legislative action in states throughout the nation, promote and presuppose an airshed, regional approach to control of air pollution. Assuredly air pollutants do not respect political boundaries, yet political entities are covetous of their local autonomy.

Locally enforced programs must be aware of the problems in a given area and thus far most control districts have, or are, moving to effectively control stationary sources of emission. In moving toward a regional approach we are advised to develop uniform standards for specific contaminants, and place reliance upon the local authority for control of specific problems peculiar to an individual area. Upon the federal criteria and control techniques, states shall adopt ambient air and specific control standards, and it shall be the responsibility of the local enforcement agency to pursue an enforcement program that shall allow business and industry to operate within the requirements of the public interest and at the same time protect our economic competitive integrity. If this is to be accomplished, and recognized by all levels of governmental responsibility, then there must be cognizance of geographic and meteorological conditions, and an integration of many functions of government and private enterprise as: planning and zoning, mass rapid transit, freight and transportation, utilities, communications, and labor resources.

You are concerned with the problems, solutions and progress to date. Additionally you are concerned with individual district

operation, specific industrial controls, and integration of the local, and State programs into the framework of the Federal provisions.

It is more or iess universal that local authority is delegated from the State and in most instances State legislation permits establishment by local control districts of standards, more, but not less stringent than the State codes. Thus there has evolved air pollution control district rules and regulations that generally follow this pattern: a basic set of prohibitions against smoke, nuisance, particulate matter, specific contaminants, and open burning. Periods for compliance, although not permitting indiscriminate violation, but requiring violators to provide plans, specifications and analysis of both their effluents and their proposed controls. Permit or registration systems are enforced. And in most, if not all regulations, provision is made for a hearing board to which an applicant denied a permit to operate may appeal for a variance to operate until such time as controls are answerable.

There are conflicting views on the degree of application of control—shall there be sweetness and light, or dynamic enforcement—educate and reason, or pressure and prosecute. My own concern is that enforcement not be punitive, but that by utilizing effective rules and regulations we work cooperatively to an end result.

Within the defined Los Angeles region my county district has, except for refineries, eleven industries larger than any others in the basin. We have the only integrated steel mill west of the Mississippi, four cement plants, two of the country's largest chemical plants and others. We apply rules and regulations concerned with the specific problems we have.

Integrating our local program into the framework of the Federal and State acts will require we provide copies of our rules and regulations to those bodies, for their review and determination as to whether they are sufficiently stringent and/or sufficiently stringently enforced to bring compliance with the standards to be established. Local districts throughout the nation will face similar review.

Anticipating Federal and State criteria and standards, we

inventoried our source emissions, and through a government improvement grant we studied the problem of dust, fumes, and particulates. At the conclusion we tightened our rules and regulations. Based upon geographic and meteorological conditions we know what our background dust-level is, we know the volume of stack source emission, and to an accurate degree the volume of intrusion of airborne particulates into our area. Our tightened regulations are intended to attain an ambient air quality by applying specific source emission standards. Because we can regulate against source emissions only, our concern shall be whether the Federal and State standards will consider background and intrusion.

With the enforcement responsibility resting with local agencies, periodic review and updating of rules and regulations will be required. If the current standards will meet the requirements with the present plants in the area, what will be the increase of contaminants if additional plants are located within the area. This will need continuous monitoring of the ambient air both in the independent districts and within the basin as a whole.

Inter- and intra-state abatement provisions of the Air Quality Act insure that industry must control health effects no matter where they locate, and should dispel any fears that plants shall close rather than control. Industry doesn't want to be adjacent to the market, but rather must be in the market where facilities and services and the labor supply is at hand. Newly established plants are capable of and are meeting the costs involved. Armed with criteria to be met, industry can install control equipment in their initial capital investment at much less cost. Long established, often antiquated plants, can meet air quality standards not alone by installation of control equipment, but also by conversion to new process methods.

Adequate standards and strong enforcement procedures should also mean more jobs. At Kaiser Steel, where a near $20 million has been expended for control equipment, and they still have some problems to answer, an air research and control staff of 17 has been maintained since 1948. Operation of the control equipment increases maintenance staff, mechanical and electrical; operators for disposal at dust collecting systems,

trucking, engineering department additions for layout and design, and personnel for testing, inspection and operation. Inherently the coking ovens are a major air pollution problem, so the company has inspectors from their Air Research Department periodically check for housekeeping; if there are clean knife edges and good maintenance the employees receive more pay. The less smoke, the bigger the pay check. Assuredly air pollution is a joint responsibility of labor and management. Equipment capable of controlling emissions will not do the job if it is not properly operated. Hot mix plants are a good example, where air fuel ratios must be maintained, if water and gas scrubbers are to do their job.

The U. S. Reduction Company is another good example in my district. When they were contemplating locating, they inquired about the rules and regulations to be met. Together with company engineers we visited plants in several cities. Equipment capable of meeting their problems was tested in other of their locations, and when they constructed their plant in 1965, controls were installed. Subsequently they have added a drier, patented in England. This equipment has meant several new jobs, and improved the capability of the after-burners on the furnaces.

Odor control in the agricultural and by-product industry is another significant problem to be met, and is also leading to additional jobs. Odors from animal wastes dried in rotary kiln driers are effectively being controlled by use of condensers and afterburners.

If we are to determine the cause, effect and solution to the problem of preservation of our air resources, scientific research, technical knowledge and engineering application must be stepped up.

Adequate legislation is now in the hands of Federal, State, and local authorities, however, the effectiveness shall be only as great as are the demands for adequate standards and strict enforcement.

Citizen participation in the decision making will be the only assurance that the standards are adequate, and that they are rigorously enforced.

3. AIR POLLUTION—THREAT TO COMMUNITY HEALTH

Honorable John B. Nicosia, *Mayor*
EAST CHICAGO, INDIANA

Mr. Chairman, ladies and gentlemen:

I am flattered and grateful for this opportunity to appear before you today. Flattered, because I'm just a doctor from a small but mighty city and grateful because whatever waves I'm making in air pollution control have been acknowledged by your kind invitation to address this luncheon.

Maybe you've wondered, as others have, what is a successful doctor doing in politics? I know at times I have.

In over 30 years of medical practice I've seen and read many thousands of lung X-rays, and therefore I have some knowledge of the effects of polluted air on the lungs of the human being.

But, as a *small* voice in the wilderness, I wasn't able to shake up the city fathers enough to make them understand what could and should be done about our dirty air. So I decided to become the *big* voice in our city. And with the help of God, and the most votes, it happened.

Besides wanting to do something for the city and its people, who have been good to me—the knowledge of the deleterious medical aspects of polluted air was the primary driving force behind my endeavors.

And that's the topic of my presentation today.

The Medical Aspects of Polluted Air

Evidence is accumulating daily which indicates that the health of Americans living in polluted areas is being directly affected by the air we breathe.

We breathe 8 times as much air as the combined intake of food and water every day. This air flows over a delicate tract in the body that is exposed to all the poisons in the atmosphere —the respiratory system.

Diseases of the respiratory tract have been increasing at a furious rate while those affecting other parts of the body have decreased steadily. The implication is clear: by adding more

pollutants to the air, man is poisoning himself out of existence at an ever increasing rate—so much so that we in East Chicago, Indiana had a standard saying about four years ago "a breath of East Chicago air, and you were ready for Medicare."

The respiratory tract was never designed to cope with modern day pollution. It was designed eons ago when primitive man dwelt in the forests and fields and there were no impurities in the air they breathed.

In spite of the respiratory tracts inability to cope with today's pollution, it is still a marvel of filtering efficiency.

It begins at the nose, where a network of hairs, visible at the nostrils, traps the largest particles. As the air goes up the nose, it passes through a field of tiny hairs called the cilia, which move endlessly back and forth like tiny oars, to turn particles back—then the air passes down into the trachea or windpipe which divides just above the heart into two tubes called the bronchi. One bronchus goes into each lung, where it sprouts millions of branches, each ending in a grape-like cluster of balloons called alveoli, or air sacs. There are millions of these sacs within the lungs, and it is within these sacs that the vital gas exchange takes place—oxygen for carbon dioxide.

But in spite of this marvelous respiratory mechanism, it just cannot do the job in this day of modern air pollution—for man has put into the air many toxic gases and countless particles that move down to the deepest parts of the respiratory system, where they can do the worst harm, because within these tiny alveoli or air sacs—these toxic gases and poisons—irritate, scar, and stiffen the elastic walls, with subsequent loss of elasticity. The respiratory system then becomes a limp, helpless target for infection, and the destructive process is continued.

I have given you a simplified description of how our bodies, in spite of a marvelous respiratory mechanism, are losing the fight to dirty air. The number of people ill with respiratory diseases runs into the millions—the tens of millions when such minor ailments as the common cold are considered.

It is a documental fact that one of every ten persons getting social security disability benefits lists respiratory disease as the reason. The cost of *this modern day peril* runs into billions of

dollars; the cost in human suffering is incalculable and *the toll is growing* at an *alarming rate.*

With an expansion of industry in this country, any physician may be called upon to identify and treat disease caused by the inhalation of dust and fumes. Medical studies have indicated that inhalation of any dust in excessive concentration, if continued long enough, may lead to clinically manifested disturbances of pulmonary function and associated diseases. Evidence of inhaled dust and fumes is almost ever present in the lungs of people living in and about large concentrations of industry and large centers of population.

Often comparisons of mortality and morbidity are made between urban and rural areas. For example, a Canadian medical group reported that among four cities studied, the city with the lowest amount of industrial dust fall and sulfur dioxide levels had the lowest prevalence of chronic bronchitis—also, this group had the lowest decline of pulmonary function—and that air pollution levels in high concentration aggravate chronic respiratory diseases.

With the increasing public health interest in chronic bronco pulmonary disease, we find that in areas where air pollution is of primary concern the medical diseases of chronic bronchitis, pulmonary emphysema, pulmonary fibrosis, bronchial asthma, lung cancer, etc., are being diagnosed at an alarming rate.

1. *Now, what is chronic bronchitis?* It is a clinical disorder characterized by excessive mucous secretion in the bronchial tree, associated with chronic or recurrent productive cough, enlargement (hypertophy) and thickening (hyperplosia) of the mucous secreting glands in the trachea (windpipe) and the bronchi.

2. *Now pulmonary emphysema*—Is an anatomic alteration of the lung characterized by destruction of the alveolar walls (air sacs) accompanied by abnormal enlargement and loss of elasticity of the air spaces.

3. *The third, bronchial asthma*—Is a disease characterized by increased responsiveness of the trachea and bronchi to various stimuli and manifested by widespread narrowing of the airways —accompanied by wheezing, dyspnea (difficulty in breathing) and airway obstruction.

I must say that these diseases are not always singular—we may find various combinations—and depending on the variety depends also the severity. Therefore, it is reasonable to assume that if these medical entities are present in a person—whether contracted in an occupational manner or in any other manner—it is reasonable to assume that inhalation of dust, smoke and irritating chemicals in excessive concentrations in air polluted areas will definitely aggravate pre-existing bronco pulmonary diseases and may accelerate death.

(*Conclusion*)

Increased levels of air pollution have been demonstrated to have an effect on the health of human beings in a variety of countries—at different age groups and with a variety of approaches. Most of these effects have been related to the types of pollution characterized by increased levels of sulfur dioxide or sulfur dioxide equivalents and particulates. Similar observation must be extended to cover other types of air pollution at varying levels of exposure.

A certain amount of air pollution will always be a part of man's environment, since air pollution has no boundaries. The level that will be considered acceptable will depend on what the public decides is an acceptable level of disease or disability in the community and what is an acceptable interference with the aesthetic quality of the atmosphere. The controls necessary to realize this level should be the responsibility of the offenders and those affected whether directly or indirectly. However, we must bear in mind, although the initial costs may be high—if we consider the cost spread through the benefits derived—everyone will come out ahead.

Every effort should be made to limit the levels of atmospheric pollution before more serious harm to human health is done. Certainly, the levels should not, and cannot, be allowed to rise. In some communities they are already above what will probably be demonstrated as acceptable and measures should be taken to reduce them.

The controls required in each community will be different,

DR. JOHN T. MIDDLETON, Commissioner NAPCA

"Air pollution is a serious problem . . . there is no time to spare."

and those to be instituted should be based upon a careful analysis of the composition and sources of the pollutants.

Unfortunately, the American public will have to come face to face more often with the ugliness of air pollution before it does something about it. Clean air belongs to everyone, and nobody has the right to destroy it.

An astounding 133 million tons of aerial garbage is now being dumped into the U.S. atmosphere each year, and 23 million tons of this garbage is sulfur dioxide—a most worrisome major pollutant.

Ladies and gentlemen—I realize that my presentation was to be on the medical aspects of air pollution, and I've tried to hew to the line. But now, my dedication and zeal will not allow me to end at these. You *must* understand the penalties of dirty air—penalties to generations yet unborn. Does the legacy we leave our children have to include poisoned air?

Are we going to do nothing until someone near and dear to us is sickened by polluted air? I say no! I say let's go home and get together with our State, county, and city officials who are responsible for the air we breathe. Let's quit pussyfooting with enforcement officials and industries who have, up until now, done little or nothing. As I've read elsewhere "Air pollution is a massive, roaring tiger, and we—so far—have managed to grasp only the tip if its tail." We have a job to do. It can be done. Let us get back to our communities and do it.

Let us remember that God gave us two basic natural resources essential to life on this earth—namely air and water. Let us preserve them, for a healthier world to live in.

Thank you.

CHAPTER THREE

Challenge—Citizen Action for Effective Standards

I. COMMUNITY SUPPORT

Edward Tuerk, *Acting Deputy Commissioner*
NATIONAL AIR POLLUTION CONTROL ADMINISTRATION
(HEW)

The forces that shape our environment are many and varied, and often conflicting. But they all have one common denominator—change.

This steadily accelerating process of change led Surgeon General Luther Terry to remark at the National Conference on Air Pollution in 1962 that, "A decade now brings changes demanding much greater adaptations in our habits of body and mind than a millenium would during the vastly greater portion of man's existence on earth."

Certainly the members of this audience have seen your share of change in recent years. I need only mention, for example, the rapid advance in steel-making technology through which the old-open-hearth furnace is fast giving way to the newer basic oxygen furnaces.

But perhaps more than anywhere else, the changes in our way of life are reflected in our changing attitudes or, if you would, changing public values. Every generation of course must grapple with its own set of particular problems which the forces of change thrust into the forefront of public attention. In the past, in this country, slavery, child labor, the twelve-hour workday, the ruthless exploitation of human and natural resources were at one time not merely endured by majority opinion, they were openly or tacitly endorsed or else accepted as inevitable in the over-all scheme of things.

Change in the institution or practices of a society—what we may broadly define as social change—can occur in response

to demands for such a change. However, for such demands to be effective there are certain conditions that must be met:

First, there must be a clear definition of the problem or the social ill for which remedial action is indicated;

Second, there must be a strong emotional commitment, or gut feeling if you will, that a continuation of the problem is wrong and not to be tolerated; and

Third, there must be a clearly conceived alternative, a remedy, a solution—a conception of a state of affairs radically different from the present—a state in which the problem is no more.

Let us look at air pollution as a social problem and determine the potential for change; let us see if we can assess where we stand with regard to creating the conditions that would seem to be necessary for it to change in response to demands for change.

First, have we defined our problem and is it understood?

In our age, a public grasp of the knowledge known in detail to scientists is critically necessary. The need for communication between the experts and the public is particularly essential in dealing with environmental problems, such as air pollution—not only because of their complexity but more importantly because the threat they pose to the public health and welfare is often more insidious and subtle than obvious.

We may find it instructive to remind ourselves that as recently as the early 1950's these threats were understood by only a comparative few. Certainly in the 1930's and 1940's, the full significance of the air pollution problem was little understood —and the subject of little general concern—even though the smoke pollution problems in a number of industrial cities were obviously acute and visibly bothersome.

At that time air pollution problems were regarded primarily as smoke nuisances. The short-term soiling of shirts played a larger role than the long-term soiling of lungs in motivating the public to seek abatement action. The authoritative judgment of the scientific community, however, was not deeply involved in the local decisions to abate smoke.

This situation is now changing because in recent years major efforts have been made and are continuing to define scientifically the problem of air pollution and to achieve effective communication between the scientific community—the physician, the engineer, the chemist, the economist, the meteorologist—and the general public—to create an attitude, if not of alarm, certainly of profound concern. The criteria documents recently issued on the oxides of sulfur and on particulate matter represent part of the efforts of the Federal government to communicate scientific judgments to the affected public.

Today there is a broad national awareness of the seriousness of this problem. Our first condition for effective action is being met—we are defining our problem and becoming aware of the nature of the threat.

However, are we as citizens emotionally committed to do something about it?

It is an inherent ingredient of our American system that public policy is shaped, in large degree, by public attitudes. We have in the Air Quality Act, a statement of Federal policy that the quality of the Nation's air resource should be protected and enhanced so as to "promote the public health and welfare and the productive capacity" of the nation. However, the Air Quality Act reserves for State and local government action the primary responsibility for prevention and control.

A month or so ago, Senator Edmund Muskie, who as you know was one of the principal architects of the Air Quality Act, had something to say about this important new legislation which I think we would all do well to bear in mind. Speaking at a meeting like this, called to discuss the air pollution problems of New England, he said, and I quote:

"We must revitalize the idea that public policy is not only the product of public agencies, but of the private sector and of individual citizens, not only on election day, but on a day-to-day, week-by-week, month-by-month basis, as citizens gather, as leaders in the private sector meet to consider what they will or will not do to promote the public welfare."

This, he went on to say, is the only kind of policy making that can most effectively take into account the differences which

apply from community to community, from one State to another. And he concluded with this note of caution: "Otherwise," he said, "there is no recourse but national policy, national agencies, and national enforcement."

The intent of the Air Quality Act, then, and the policy of the National Air Pollution Control Administration, is that air pollution be attacked as an individual problem in each region of the country, and that it be attacked by a combination of State and local governments guided by the explicit desires of the public in the region. The intended primary role of the Federal Government is to provide information and assistance to the States and to local governments to make certain that the machinery of the Act operates at peak efficiency.

The major ingredient in the effectiveness of State and local action will be the attitudes of the affected citizen. If he truly wants clean air the control officials and the political decision makers must be made aware of his attitudes and his desires.

For this reason, I can't emphasize too strongly the importance of broad participation in the public hearings on air quality standards that will be held in the coming months, here and in other areas where air quality control regions are established.

State officials have the responsibility of making a genuine attempt to find out what the public wants, the goals it wants to reach, and the time-table it wants to see followed in reaching these goals; and then they must see to it that these views are taken into consideration in setting air quality standards and developing plans for implementing and enforcing these standards. That's the whole point and purpose of the public hearings.

But private citizens also have important responsibilities; and this certainly includes the members of this audience. Let me try, if I can, to put this into clear perspective. To begin with, let's remember that a great many industries will be directly affected by requirements for the prevention and control of air pollution. You, as steel workers, have a stake in what is done by your industry both as employees and as citizens who live in communities whose air quality will be directly affected by the action or lack of action to which the industry becomes committed. I think what is important when we talk about changing attitudes and

changing values is to recognize that we are now becoming ever more concerned about the total quality of our life—the total quality of our environment. It does little good to negotiate contracts which effectively increase the amount of leisure time available to us when the natural resources, which make that leisure truly worthwhile, become unavailable or unhealthy.

It is to this attitude that economist John Kenneth Galbraith addressed himself when he said not long ago:

"It is hard to suppose that penultimate Western man, stalled in the ultimate traffic jam and slowly succumbing to carbon monoxide will be especially enchanted to hear from the last survivor that in the preceding year gross national product went up by a record amount."

But this point of view, one that emphasizes the economic impact of air pollution control, will certainly be expressed at the hearings. This is only right and proper. It is our hope that industry will participate fully in this process. The members of this audience have a personal stake in seeing that the steel industry continues to prosper. In fact, every one of us, every American, has a stake in the continued viability, not only of the steel industry, but of the entire industrial system which is the backbone of this country's economy.

But all of us also have a very personal stake in America's health and welfare, and in protecting the environment on which all of life depends. There is in the March issued of the *Allied Industrial Worker* a two-page article titled "Danger—Pollution at Work" which summarizes the pollution threat to our air and water resources and which suggests that to date our solutions have been too timid.

The private citizen, then, has both the right and the obligation to speak up for standards which consider not only the rights of industry but reflect everybody's right to breathe clean air.

Thus far we have discussed two of our three conditions for effective action—we now know better what our air pollution problem is and what contributes to it and we have outlined the scope of the public's attitude and feelings. We have yet to consider our action plan—do we have a clear indication of what must be done to effect change?

There is still a period of time before the public hearings get underway in the air quality control regions. But it is by no means too early to begin preparing the groundwork. There will be no time at the hearings themselves for private citizens to prepare arguments and work out strategies to insure the drawing up of effective standards and plans for putting them into action. The hearings, in our view, should simply mark the culmination of the efforts which can be launched now. It is time—*now*—for citizen groups and citizen leaders to begin a continuing dialogue with the public officials who will be responsible, ultimately, for the decisions that are made—whether those officials are to be found in the legislature, in departments of State government, or in city hall. It is time to begin making your own decisions—not only as steel workers, but as responsible members of your own community—about the quality of the air you want to live with, and what kind of regulations you want drawn up to insure that this quality is not only achieved in a reasonable time, but also maintained throughout future community growth and development.

And it is time, if your actions are to be meaningful, to learn more about the technical side of this business of air pollution control. To begin with, I think it is important that we all have a clear understanding of what we are talking about when we speak of standards and implementation plans.

Air Quality standards are prescribed maximum limits on the levels of pollution that can be reached in the ambient air during a given period of time. In selecting air quality standards, a region is, in effect, deciding how clean it wants its air to be. In other words, the standards represents the minimum goals the region wants to reach.

While questions of health protection are essential in setting air quality goals, there are many other decisions to be made in setting standards which will have an important impact on our economic welfare and the quality of our lives. For example, how much of the beauty and enjoyment of life are we willing to sacrifice to air pollution? We will have to answer this. We will have to examine all the ways in which air pollutants harm the environment and our general welfare—and then make our de-

cisions and set our goals. We must also be realistic. We must set goals that can be reached, and reached in a reasonable length of time.

After this, the implementation plan will spell out the steps that will be taken to reach the specified goals. The heart of the implementation plan is an emission reduction strategy, which includes the sources to be controlled, the degree of control to be accomplished and the time schedule.

Roughly speaking, we would expect the implementation plans to be designed to show significant progress at intervals of, say, every one or two years. And if the total time proposed for reaching the standards exceeded five to seven years, we would expect interim standards to be set to provide a yardstick of progress toward the final standards.

Already, all across the country, groups of citizens are working together in the way I have described to prepare the way for truly effective action at the forthcoming regional hearings. Voluntary health organizations, such as the National Tuberculosis and Respiratory Disease Association and others are deeply engaged in this work. So are the General Federation of Women's Clubs, and other local, State and national organizations. American labor—and particularly the progressive element of labor which you here represent—can make a most valuable contribution to this effort. The fact that you have called this conference encourages me to believe that you are prepared to put your shoulders to the wheel.

Change is with us—it is a fact of life—but for it to be planned change—change which improves the conditions under which we live, there must be on your part as well as ours a commitment to action. It's up to *all* of us.

2. LABOR SUPPORT

George Taylor, *Economist*
RESEARCH DEPARTMENT, NATIONAL AFL-CIO

It is most encouraging to appear before this group of delegates from a great union which has decided that it is time for their membership to roll up their sleeves and take an active and

informed part, as union members and citizens to do something about helping to clean up America's foul and filthy air where they live.

The AFL-CIO itself has been deeply concerned over air pollution as a national menace and active in supporting programs to control it.

The 1963 convention adopted a policy statement on natural resources which urged efforts "at all levels of government to abate increasingly serious threats to the nation's health and economy from air pollution."

In 1965, the AFL-CIO convention urged strengthening of the Federal air pollution control program "by increasing grants-in-aid to state air pollution control agencies, to establish strict federal performance criteria . . . to provide strong federal enforcement machinery, and to provide economically feasible techniques of reducing air pollution from motor vehicles, industrial and municipal contaminants."

Two years later, in 1967, our convention issued a special policy statement on air and water pollution. With regard to the former, we urged:

1. Amending the Clean Air Act to direct the Department of HEW, without delay, to adopt national emission standards governing release of pollutants into the air from stationary sources.

2. Strengthen and streamline federal enforcement procedures and machinery.

3. Federal research and development programs to develop electric powered vehicles to reduce the largest and most rapidly growing source of pollution-motor vehicles.

4. A thorough evaluation of the thermal effects of nuclear power on air and water quality.

5. Representations by organized labor on the Presidential Air Quality Advisory Board, created by the 1967 Air Quality Act.

What is particularly relevant to this conference is the urging in the 1967 air pollution control policy statement for "participation by all AFL-CIO affiliates in local and state programs to help establish strong air pollution control programs."

I think I can safely speak on behalf of the AFL-CIO in saying that the Steelworkers have taken an important first step by holding this conference and what will come out of it. We hope that your example will be contagious.

In addition to producing policy statements, the AFL-CIO has testified before Congressional Committees on pending air pollution control legislation, and appropriations to carry forward existing programs. Representatives from labor have served on governmental advisory committees in this field and on the steering committees for all three National Conferences on Air Pollution conducted by the Department of HEW. A representative of organized labor is a member of the President's Clean Air Advisory Committee which held its first meeting in 1968 and will meet again in April of this year.

The AFL-CIO monthly Federationist has published two articles on America's air pollution problem, the most recent of which has been combined with three other articles on resources and environmental issues in a pamphlet entitled "Man and His Environment," available in quantity to all of our affiliates and other interested organizations.

Over the AFL-CIO radio program, AFL-CIO staff and others, have discussed air and water pollution problems to a wider audience.

One thing should be remembered. Labor is not alone in its desire to clean up the air, either nationally or locally. Many other organizations are potential allies—conservation groups, women's clubs, health organizations, a considerable segment of the academic community, not to mention your own Federal Government constrained as it is by limitations of existing statutes.

Jack Sheehan, for example, is a member representing organized labor, of an organization called the National Air Conservation Commission, sponsored by the National Tuberculosis Association, and which is motivating and supporting stronger efforts at a state and local level, with the assistance of the 1700 or more local TB Associations as basic nuclei of support around which other organizations, such as labor unions can rally to establish a united front for clean air.

These are some of the things that have been done by or-

ganized labor to stimulate the kind of active involvement that is represented here today.

But all this is only a beginning.

The question now arises, why should union members become excited enough about air pollution to spend some of their time in helping to stop it?

Until recent years this nation has rationalized radically increasing pollution of its air as the price of progress—a factory chimney belching smoke means jobs and full dinner pail, so be grateful we have been told constantly.

We know now that it is not true. The smog that dirties the curtains in our homes and offends our nostrils, decreases visibility, corrodes metal and paint, is more than that. It is a killer and it is everywhere where men live, work and travel. People become potential prey to the effects of air pollution from the day of their birth. Increasing numbers of Americans are becoming afflicted with respiratory conditions—everything from the common cold to lung cancer—all of which is aggravated by breathing foul and polluted air.

People don't die immediately from foul air constantly passing through their lungs, although it may adversely affect their health, when the pollution of the air they breathe is chronic, as it is in most of our cities.

But sometimes a disaster strikes. We have all read about the one that happened in Donora, Pennsylvania, in 1948—20 dead. Some may have heard of a disaster in Mexico City in 1950, with 22 dead. In 1952 the great London, England, killer smog took 4,000 lives, and there have been serious smogs in both London and New York City in 1962. In 1966, New York City and surrounding areas went through still another, with at least 80 deaths directly attributable.

So there is a reason to become concerned and excited about unrelieved and mounting air pollution—the life you lose may be your own.

There is another reason to shatter public apathy. It is a longer range consideration, but if we have a sense of responsibility to future generations who are going to have to live on this planet, it is of the gravest importance.

Air is a resource, like water or land, and limited. We depend on a limited supply of oxygen which is kept in balance by photosynthesis, the process by which green plants take in water and carbon dioxide, combine them to produce organic matters and liberate oxygen as a by-product. If the oxygen required for the burning of fuels to generate more electric power and move motor vehicles around is greater than the amount produced by photosynthesis, our limited oxygen resource is threatened and with it the lives of future generations. And if the burning of fuels emits more carbon dioxide into the atmosphere than the oceans can absorb, this additional amount of carbon dioxide, according to scientists, act as a heat trap for radiation from the earth, which can alter the earth's climate eventually.

With regard to the first, Dr. Lamont Coles of Cornell University has estimated that in 1966 the amount of oxygen produced in the United States was not quite 60 percent of the amount consumed. This is a balance which if similar to the rest of the world and sustained over a number of years, could spell disaster to our species, and much of other living species, as well.

Remember that there is no area of choice in options on quality of air, such as there is in water quality. If the public desires to have a river used as a conduit for industrial effluents and raw sewage and not for fishing, swimming, or outdoor recreation, this choice can be made. But one can't say, well, I guess it's not too important to breathe air for jogging or smelling flowers, so I'll conserve my breathing for vital matters, such as when I eat, work, sleep, or make love.

In 1966, former HEW Secretary John W. Gardner said: "The truth is that we are actually losing ground in the fight against pollution. The smog continues to grow more dense, even as we continue to talk about it."

The passage of three years and the passage of the 1967 amendments to the Clean Air Act has not given reason for any optimism, even though the National Air Pollution Control Administration has established a half dozen or more of the 31 potential air pollution control regions in heavily populated metropolitan regions, and has now published air criteria to determine the adverse effects of sulfur oxides and particulate air pollution.

This is what complicates the problem:

1. An urban population which is expected to increase from 130 million in 1965 to 175 by 1980.

2. An increase in motor vehicles from 85 million to 120 million between 1965 and 1980.

3. Energy requirements will zoom from 53 quadrillion BTU in 1965 to 79.2 quadrillion BTU in 1980.

4. Production of refuse is forecast to rise from 170 million tons a year in 1965 to 250 million tons a year by 1980.

Rachel Carson wrote a number of years ago: "In biological history no organism has survived long if its environment became in some way unfit for it. But no organism before men has deliberately polluted its own environment." It is though, like the dinosaur, man has in him some sort of an enormous and perverted environmental death wish. His intellect tells him that this whole process of contaminating air and water and land can be stopped, but an inner compulsion based on a false set of values, keeps him headlong toward disaster.

What can we do? Most importantly, what can you do, when you go back home. In the first place, ask yourself why it is necessary to live in foul air. Ask yourself if you want to spend your days, particularly if your home is in a heavily polluted area, as though you were a member of a Civil Defense unit with the threat of nuclear warfare hanging over your head.

I have in mind a set of emergency instructions issued as a public service by the National Tuberculosis Association advising citizens what to do when air pollution is heavy:

Use public transportation wherever possible. Use your automobile only if absolutely necessary.

Reduce room temperatures to legal minimum, unless health considerations prevent such action.

Stop all outdoor burning.

Use as little electricity as possible, either for lighting or appliances.

If you suffer from a respiratory ailment or heart condition:

Remain indoors with the windows closed.

Don't smoke. Avoid rooms where others are smoking.

Eliminate unnecessary physical exertion.

Stay under your physician's care.

There must be some better way, don't you think?

One of the major problems which prevent action to clean up our air is public apathy. This must be overcome, everywhere.

I hope that all of you through your locals will become charter members of municipal, metropolitan and statewide anti-pollution campaigns, or join existing ones if they are after the kind of programs that seem to meet the problem.

Here are some suggestions:

Get the basic facts—Is air pollution a serious problem in the community? If so, why? Is it mainly exhaust from autos, trucks and buses, the major polluters? How about smoke from electric power generating plants, factories, office and apartment buildings, or private homes? Is open burning of trash in yards or city dumps a current practice?

Determine what's being done now—Is there an effective local air pollution control program? Does the control agency have enough staff to spot the violators? Are violators punishable by adequate fines? Are permits required for installation of heating and burning equipment? Is there an effective State law so that violations can't occur just outside city limits?

Spot the opposition—Are businesses, industries, real estate interests or others dragging their feet, obstructing the effort to reduce pollution because they fear it will cost them money?

Join with other groups—With other unions, civic organizations and health agencies such as the Tuberculosis Association help organize the campaign to combat pollution.

Bring Pressure—Call attention publicly to all forms of air pollution. Write letters to City Hall and the newspapers reporting persistent violators. Contact city councilmen, county commissioners and state legislators to urge stricter ordinances and laws to clean up the air.

A few other suggestions: First, find someone in the community, from a college or a university, who can help you with the technical aspects of air pollution. Write to the Air Pollution

Control Administration in Washington for help. You might get assistance also from your local or state health departments. In that way, you can't be hornswoggled by fast talkers from industry.

Second, passing a law or an ordinance, glorious victory though it might be, is only the beginning. Watch for the way the law is enforced, use all your united pressures to keep from allowing special variations, or undue postponements. Be sure that adequate money and skilled manpower are available to operate the program. Otherwise, it will all be a paper victory, nothing more. Dogged continuity by citizen groups is a must.

Finally, remember that indispensable to a meaningful program at any government level to clean up dirty air, is an affirmative alliance between the people and the politicians. All interested progressive groups, including our unions, must band together and draw in as many other citizens as possible, support elected officials who will fight for you, force the fence straddlers to take a stand, and convince industry that it is defying public opinion by not cleaning up its mess.

Let's not kid ourselves that this is an easy job. It is not only complicated by its very nature, but by dollar psychology, public apathy, and the difficulty of controlling the pollution carried by the free moving air, which contemptuously ignores the boundaries of a multitude of local and state governmental units which are established and grew up generations before the air pollution crisis struck. For example, the New York City area covers three states, 22 counties, and 1400 different political subdivisions. How do you get them to work together? What new organizational patterns are needed in the environmental field, including air pollution? Certainly, the problem of air pollution and other environmental hazards is something that our present modes of government were not calculated to handle effectively or efficiently.

The weaknesses of the Clean Air Act at a Federal level must be corrected by amendment in order to give the Department of HEW the power to set standards of emission of pollutants from stationary sources such as power plants, steel mills, oil refineries and the like.

In addition, the Department of HEW must be given clear-cut enforcement authority, and not operate under wraps and with procedures, which, under the present law, makes it virtually impossible to undertake a strong preventive program, with the assistance of state and local governments. There must also be provision by amendment to the Clean Air Act, if necessary, to enable the Department of HEW to undertake intensive research and development on alternatives to internal combustion driven motor vehicles.

In 1966, Senator Gaylord Nelson said, "I think that authority has to be in the Federal law in order to assure that you get uniform air quality standards all the way across the nation. How soon Congress will be prepared to take that step, I don't know . . . When a few Congressmen can't breathe, then maybe they will support it."

Somehow, the Federal program must be able to move to abate interstate air pollution situations. As things are now, HEW is still trying in the Federal courts, to get a Delaware chicken factory to clean itself up, after years of effort. A few years ago, a large steel plant in Weirton, West Virginia, emitted a large amount of carbon monoxide from a defective furnace. Thirteen people were made ill and two were hospitalized. U.S. Public Health Service personnel volunteered to come in and find out what was wrong. This was all they could do under the law, unless the town officials asked them. The company refused to let them in, and the town council backed them up. These two incidents illustrate the deficiencies under which the Federal Government presently operates. They also illustrate that you can indulge in some friendly persuasion with your Congressman when you return home.

Admiral Hyman Rickover wrote a few years ago that "There is a need of wider recognition that government has as much a duty to protect the land, the air and the water against technological damage, as it has to protect the country against foreign enemies and the individual against criminals."

The labor movement came into being, not only for economic reasons, but to serve as a rallying point in the fight of people everywhere to lead fuller, freer, happier lives. In this age, hu-

man freedom and human well being depend in large measure how well we harmonize the natural system of the world with how we manipulate it by our technology. It is a pleasure to know that the United Steelworkers are rising to the challenge.

CHAPTER FOUR
Problem—Feasibility of Control

1. TECHNOLOGY AND ECONOMICS OF CONTROL—STEEL INDUSTRY

William Megonnel, *Assistant Surgeon General*
National Air Pollution Control Administration
(HEW)

In view of the fact that the Steelworkers Union was concerned enough to sponsor this meeting, I presume there is little need to convince you that air pollution is a problem that should, must and can be prevented, controlled and abated.

Since you all are more familiar than I with the steelmaking process and its various effects on the environment, I need not dwell on the soiling by steel-mill affluents of automobiles, building exteriors, window sills and walls, laundry, furniture, rugs, curtains and other surfaces. You know about the depressing gloom of a smoky, dusty atmosphere and the concern over what it may be doing to the health of citizens.

To determine the relative quantities of pollutants attributable to iron and steel mills, air quality studies were made in four iron and steel-producing communities during and after the 1956 steel strike. When the mills were operating, suspended particulate levels—airborne dusts, if you prefer—were 1½ to 2¾ times higher, the iron content of samples was 2½ to 11 times higher, and soiling was twice as high as during the strike. In the heavily industrialized upper Ohio River Valley dustfall was found to be about 10 times as much as typically is found in cities of 100,000 to 1,000,000 population; suspended particulates were seven times as high, and soiling was more than twice as high.

I am not trying to say that steel making is the dirtiest of business—nor is it the cleanest. I'm not saying it contributes

more than other sources; it is merely one of many air polluters. Nor do I intend to imply that management is unconcerned and irresponsible. It is useless to look for *the* culprit when considering air pollution, for we all are guilty.

While the individual citizen complains of malodors, soiling and unsightliness, seldom does he stop to consider his contribution to the problem. This is because obvious air pollution is not so much created *by* him as it is created *for* him in our modern life. He operates an automobile, but the pollutants usually are invisible and he considers them unimportant compared to the smoky, stinking exhaust from a diesel bus or truck. If he owns a home, he burns fuel to heat it, cool it, produce hot water and cook his food; but he considers these nothing compared to the factory, power plant, store, school or government building down the street. In some cases, he burns trash and leaves; but what, he thinks, does this amount to compared to the vast, open-burning dumps that still exist in too many communities. Even if he is an apartment dweller who eats in restaurants, dumps his refuse into a chute and uses public transportation, hardly ever does he consider that power plants operate to supply *his* energy needs, incinerators and public or private dumps dispose of *his* refuse, factories produce the goods *he* demands, trucks deliver *his* necessities and luxuries, and buses take *him* where *he* wants to go.

So, it can be seen that nobody escapes responsibility for creation of or contribution to air pollution. It should be equally apparent, since we all live in a sea of air, that we cannot completely escape the consequences of polluted atmospheres. Not so obvious, perhaps, is the fact that each of us will have to pay for abatement and control. It is not exclusively the other fellow's problem; it is yours and mine as well. The question, then, resolves itself to *how* air quality can be restored and preserved, and how much it will cost. So let's consider what is being done, who is doing it, what more must be done and what the price will be.

In some cases, pollution abatement regulations have a very direct effect on the individual. Certain communities have regulated the quality of fuels that may be used and types of combustion equipment that may be installed; the increased costs were

borne directly by the home owner. Many local ordinances prohibit backyard burning, and the homeowner is faced with a monthly trash-collection bill or higher taxes. The motorist purchasing a new car must pay for exhaust control systems that are required to comply with Federal regulations, and he may encounter higher vehicle-maintenance costs in accordance with State requirements. These costs are direct and readily apparent to the individual who pays the bill. In most cases, the costs are quite moderate, not nearly what is predicted, when regulations are under consideration, and they prove to be well worth the expenditure.

The cost to the individual citizen often is so indirect he may not even recognize it. A power plant may be required to burn higher-quality fuel or to install flyash collection equipment. These measures are costly, to be sure, and it is not unusual to read a newspaper account telling that an electric company has spent a great amount of money as its contribution toward clearer air.

An electrostatic precipitator for a large coal-burning power plant might cost ten million dollars, or 8-10 percent of the plant investment. The switch from high to low-sulfur fuel announced by one large utility cost $15 million a year. These are impressive figures. They also are misleading.

Let us put this subject into proper perspective. Consider who really spends the money and how much it costs. It must be remembered that public utility rates are regulated and utility companies are guaranteed a fair return on their investments and operating costs. So, did the company really spend ten million of its investors' dollars to purchase a precipitator, or will it reduce its profits by $15 million in the public interest to purchase low-sulfur fuel? Almost certainly not. The cost will be passed on to the consumer. In the case of one large utility, a $10 million precipitator, in terms of increased electricity costs, amounted to less than ten cents per month on a residential electric bill; and a $15 million higher fuel cost meant about 14 cents increase per month. In either case, the increase in electric rate was less than one and one-half percent, hardly an unreasonable expenditure in the interest of cleaner air, better health and welfare, increased enjoyment and community pride.

Or consider the impact of air pollution control on the steel industry. Thirty primary iron and steel companies had expenditures for air pollution control in 1968 of more than $50 million —a very impressive figure. But it's an average of $1.7 million per company. Expressed as a percentage of capital expenditures, air pollution control expenditures were only 2.81 percent of the total—and to give you an idea of the impact on other industries, this was the highest proportion reported by the 16 industry categories studied.

One often reads that a certain mill has spent great sums of money to abate its pollution; seldom, if ever, is the expenditure, which also is passed on the consumer, discussed in terms of cents or mills per ton of steel or an increase of hundredths of a percent in the cost of a new automobile.

Other examples, with similar results, can be given for other types of sources.

One can find various references to nationwide industrial air pollution control costs; one of the highest I have seen recently placed the cost at $850 million per year for installation and operation of equipment, disposal of collected pollutants and taxes. Without disputing this figure, though not vouching for it, let us analyze it in other terms: This is three percent of new plant investment, 0.5 percent of the value added by manufacture and 0.14 percent of the gross national product. Surely, expenditures of these proportions are not going to bankrupt this country.

The danger faced by industry is not that control requirements will bankrupt them, cause unemployment and breadlines, and all the other dire consequences that are supposed to result if our skies are cleared. Industry's concern should be with the failure by different governmental jurisdictions, particularly neighboring ones, to adopt regulations of similar stringency and to enforce them universally and equitably against any and all sources. To do otherwise is inconsiderate of the citizen who must contend with unnecessary air pollution arising either in his own or a neighboring community, and it is eminently unfair to industry in that competitors in lax jurisdictions gain a cost-of-doing-business advantage over those located in jurisdictions with aggressive and progressive enforcement programs.

The Air Quality Act of 1967 is designed to cope with such inequities through its emphasis on the regional approach to air pollution prevention and control. I will leave discussion of the Act's specific provisions to other speakers and confine my remarks to more general matters of controlling air pollution.

It should be pointed out that not all air pollution regulations result in economic loss to industry. Frequently, control and disposal result in the development of new products, cheaper production methods, recovery of salable salvaged material and conservation of resources. Sulfur-recovery plants and vapor-recovery systems at oil refineries more than pay for themselves. Chemical and other industries sometimes find that recovered materials can be sold at far more than control costs. In other cases, a portion of the control cost can be recovered. Of direct economic gain to industry is the manufacture of control equipment.

All things considered, if there is any adverse economic impact from regulatory controls, it must be an extremely minor one. If one were able to measure the over-all impact on the community as a whole, there is no doubt that the benefits of control would exceed the liabilities of not controlling. Much has been said and written about "economic feasibility" and "undue cost" of controlling air pollution. Recently, however, there is a tendency—rightly, I believe—to consider social values rather than, along with, traditional economic issues. More and more, the question is raised: Economical to whom? To a given air pollution source or to society as a whole?

It is nonsensical to wait, while air pollution grows worse, for the perfect control system: one that costs no money to purchase or install, takes no space, requires no maintenance or operating attention, uses no power, presents no disposal problem and recovers a profitable product.

Imperfect as methods may be, economic studies consistently have shown that air pollution damage is seven to ten times the cost of control. In the most recent Federal abatement conference in the Trenton, Philadelphia, Ashland, Ky. and Huntington, W. Va., interstate area, for example, soiling damage was estimated at $2 million per year and capital costs for control at

$3 million. If the public is to subsidize the cost of doing business I'm sure they would prefer to do it in the form of slightly higher prices amidst clean air, rather than in the much higher costs of contending with dirty air. What I'm saying is that the choice is not one of cleaner air versus empty pocketbooks. Prosperity need not mean smoke and grime.

Many examples of the impact of polluted air—and the results of doing nothing, or too little, about it—can be given. A good many of them can be assessed in conventional economic terms; others are social impacts which defy measurement in traditional monetary units. It would be questionable, if not repugnant, for example, even to attempt to place a dollar value on health—physical or mental; but that is what the air pollution control agency often is asked to do when it must, by law, justify and defend its programs on the basis of economic feasibility and cost-benefit ratios.

Health, happiness, comfort and enjoyment may be abstract and defy scientific evaluation; but they are being increasingly demanded by citizens and are nonetheless real. Taking such human values into consideration will require new techniques for measurement and new tools for satisfying them. Unquestionably, a base broader than only the traditional profit incentive must be used in future decision-making processes.

Whenever attempts are made to assess the impact of air pollution control, it is in a negative sense: How much money did it cost? Whether pollution is controlled or not, we are paying the "cost," but seldom is the impact evaluated in positive terms, such as: How much good-will did our company gain? How much easier is it to recruit and retain employees, and how much higher is their morale? How much prouder are they to be associated with a public-spirited organization? How much pleasanter is our community as a place to live, work and play? How much do our citizens save in upkeep and repair of their properties? How much is the municipal budget reduced for landscaping, housekeeping and maintenance of publicly owned facilities? How many resources have been diverted to more fruitful endeavors from the effort to maintain decent conditions in the midst of polluted air? How much has the community's reputa-

tion been enhanced? How much of a housewife's cleaning time and drudgery have been turned into leisure periods for more pleasant or more productive pursuits? How much are utility bills reduced because of less deterioration of insulation and less corrosion of electronic contacts and other metal equipment? How much better is the view? How pleasant not to be bothered by foul odors? How much mental depression has been alleviated? These and a thousand other benefits of a clean environment, if we had some means of evaluating them, certainly would tip the scales in favor of pollution prevention, control and abatement.

These are not easy things to measure. They are not included in weekly paychecks, profit and loss statements, governmental budgets or the gross national product. But they all are part of the satisfaction, comfort, pleasure and enjoyment that go into the good life. As you in the labor movement have made eminently clear, there is more to life than simply having bread on the table. I'm sure you agree that the right to clean air is an amenity that can and should be provided in our modern society with its high standard of living. I congratulate you on your public-spiritedness in sponsoring this conference and invite your assistance in clearing the air.

2. TECHNOLOGY AND ECONOMICS OF CONTROL—NONFERROUS INDUSTRY

Arthur Dammkoehler, *Air Pollution Control Officer*
PUGET SOUND AIR POLLUTION CONTROL AGENCY,
WASHINGTON

The history of men, whether written or archeologically discovered, has one overpowering feature—civilization. Consistent in all ages; ever greater with each passing millenium, this feature prompted Will Durant to name his famous series *"The Story of Civilization,"* and throughout our history the most prominent expression of civilization has been the city. It is no accident that the words "city" and "civilization" have a common Latin root.

It amuses us to dwell on the images of the city in the past. We can be jocular about the citizens of medieval cities dumping chamber pots on the heads of unsuspecting passersby, as we reflect on our sewers of today. We can visualize togaed Roman senators rising in the Forum to speak against the clattering, crowding chariots, then passing regulations banning them from the city center. Despite ourselves, we swell a little with pride when we compare this with the hundreds of thousands of fast-moving gas buggies that choke our cities of today.

After all, haven't men survived and multiplied despite wars, famines, plagues, and the agonizing requirement of raising the cities of the past with virtually no power but that of the human muscle? But there you have two key words—survival and multiplication, which exercise us today in the field of environmental control.

We have learned in the short span of a century to demand more from our environment than mere survival of the strongest of us. Somehow, we have come to believe that infant mortality should be close to zero. We think old age should be free of unnecessary suffering. Moreover, we think that the strong and the weak alike should be free of unnecessary malaise, discomfort, and vexation from a miserable environment. We are even demanding a certain amount of graciousness from our environment not as a privilege but as a right.

The second key word, "multiplication," increasing population all over the world, is causing great concern in many quarters not only from the threat of lack of food but from the threat of lack of living space. This is being complicated immensely by an unprecedented flood of population to urban centers. And this is raising a grim spectre of total environmental population. Air and water pollution, refuse, noise, congestion, overcrowding, traffic jams all result from more people, more urbanization, more production and more consumption.

In the foreseeable future, whole systems of environmental protection will be needed on a national scale to mount a comprehensive attack on environmental pollution. Not only must this attack be mounted in cities like New York, Chicago, and Los Angeles, but whole metropolitan regions such as Puget Sound

must be included. Without a system of environmental protection, metropolitan regions will inevitably suffer the consequences of environmental pollution. Although I will be discussing air pollution specifically, you should remember that air pollution is but one aspect of the many phases of total environmental pollution and that it is related to water pollution, mass transit, solid waste disposal, and urban planning.

A study of local air pollution control programs elsewhere shows that the program objectives can usually be boiled down to this: prevent additional pollution of the local air and reduce existing air pollution. This is a reasonable and proper objective for any area suffering from air pollution, but because of the complexity of the problem, its overwhelming size and its seriousness, air pollution must be attacked on every existing level of government and in some places, including the Puget Sound region, on what amounts to a new level of government—the Regional Air Pollution Control Agency.

The Regional Air Pollution Control Agency is relatively new on the scene, but its existence is made necessary by the inherent regional nature of air pollution within an airshed. Once pollutants are released into the air space, no control over them by man or machine is possible. When the volume and concentration of pollutants become great enough, the air pollution problem invariably encompasses whole regions bounded only by vast natural barriers.

If air pollution is usually a regional airshed problem and if air pollution must be controlled at its source—as it must—then it follows that a major responsibility of the regional level of government is enforcement. That is precisely the responsibility of the Puget Sound Air Pollution Control Agency.

The Air Quality Act of 1967 recognized the need for regional air pollution control programs and one of its stated purposes is to encourage and assist the development and operation of regional air pollution control programs.

The main objective of our program can be quite simply stated. I only wish that these objectives could be as easily met, as said. Our job is to reduce pollution emissions that are occurring now, and to establish regulations through which we can

prevent further emissions in the area as the population and economic expansion of the region progresses. The raw materials with which we will work will be sufficient staff, well-enough equipped, and provided with realistic but comprehensive legal authority to do the job.

The experience of dozens of communities across the country has shown that without citizen support, nothing is ever done to control air pollution. In the State of Washington, and particularly in the Puget Sound region, we *do* have an aroused citizenry who will actively support control legislation at all levels of government. As a result of this support, we do have a Regional Air Pollution Control Agency in the Puget Sound area.

Established by legislative fiat under the 1967 amendments, the Puget Sound Air Pollution Control Agency was officially organized in July of 1967. Serving King, Pierce and Snohomish Counties, the Agency encompasses 7,910 square miles—approximately half of which is mountainous. The nonmountainous portions of these three counties is 100 x 35 miles in extent: more than half the State's population lives and works within the 3500 square mile area.

Under the law, its Board of Directors was invested with the powers and duties of a municipal corporation including that of adopting, amending, or repealing rules and regulations for the control of air pollution; the duty and privilege of holding public hearings; and the authority to grant variances.

Our major efforts since the Agency was established have been in recruiting and training personnel, in developing administrative and legal procedure, and finally in formulating regulations on which to base our abatement and enforcement program.

Some highlights in the area of program implementation are:

1. A staff of 42; approximately one-half are professionals such as engineers, chemists, meteorologists, 12 trained inspectors and a lawyer. The remainder are support personnel.

2. Acquisition of a 10-station telemetering system to handle our air monitoring and data analysis needs.

However, our most important accomplishment to date is Regulation I.

To achieve this goal, our Board of Directors immediately addressed itself to the development of an areawide air pollution control regulation. This regulation took many months to put together and was possible only with the assistance of five dedicated and knowledgeable members of the Advisory Council.

The Advisory Council based its consideration primarily on present technicality and feasibility of implementing present day controls in our locale. An important consideration was the degree of public acceptance that could be achieved. These considerations lead to differentiation in standards for new and existing equipment, the concept being that the highest of modern standards could not be met by older installations without extensive remodeling and undue economic hardship.

Finishing touches were applied by the board members, and the regulation was then submitted to public hearings last February and was formally adopted in March, 1968.

The hearings were far from being a mere formality—a gesture to mollify critics. Most of those who attended the hearings had given detailed consideration to the proposals. Some of the best and most experienced industry leaders conversant with air pollution, its causes, effects, and control presented their views in depth. The hearings not only afforded full opportunity for public review of the proposal, but afforded the board insight into problems of industry that probably would not have been achieved in any other way. The hearings resulted in some modification of the proposed regulation.

Representatives of labor unions also testified at the hearings. Among them were the U. S. Steelworkers of America, District 38, Subdistrict 4. I would like at this time to quote from the statement of the International Brotherhood of Pulp, Sulfite, and United Paper Mill Workers, United Paper Makers and Workers AFL & CIO to the Puget Sound Air Pollution Control Agency. This statement pretty well sums up the attitude of the statements from the unions:

> "We do not appear before you as being opposed to this Agency, nor do we appear before you as being opposed to any regulations this Agency may establish. However, because we do represent a substantial number of employees in

a company in this area we are vitally concerned in the welfare of these employees as well as the welfare of this community.

"We have no competence in regard to the standards proposed by the Agency. We cannot advise the Agency as to the economic or technical feasibility of meeting the standards proposed by the Agency. These matters are the ones which must be discussed by industry and the Agency. We know that the community and the workers want clean air. We know that industry wants clean air. We favor clean air and we hope that industry can improve the conditions in the atmosphere in this community.

"We expect these companies to do the best they can and if they do not, we will join with the Agency and the rest of the community to see that these companies do, to the best of their ability, clean up any pollution problems which might prevail in the area. However, we cannot in all good conscience agree that regardless of the consequences the emissions from the various plants in this area shall be reduced at the expense of the employees of these plants.

"If it is found the standards which are established are such that a company cannot economically or even technically meet them, then we would take the position that the Agency must give some relief, either in the form of relaxed standards, or in the form of a variance as provided in Regulation No. I."

The chairman of the Board of Directors, responding to the concern of the unions as expressed in this quote, stated when regulation I was adopted:

"Violators will be notified that they exceed the standards and will have an opportunity to present to the Agency a workable plan to insure their compliance within a given period of time."

Compliance time means a definite scheduled time during which the operator commits himself to come into compliance with the regulation. This time will be set by the Agency after discussions with the operator. The time will be reasonable, depending upon the particular circumstances of each case.

Abatement action will only be pursued where the operator fails to agree to a compliance schedule or fails to meet a compliance schedule, without reasonable excuse, after a compliance schedule is established.

The purpose of Regulation I is to provide necessary control over the sources contributing to air pollution now, and to establish limits of certain pollutants that may be emitted from future sources. Specifically, the regulation provides for the registration of existing sources, notification of construction of possible new sources, a formula for the processing and granting of variances, and for achievable emission standards to limit escapement of air contaminants to the atmosphere. As defined in the regulation, the term "air contaminant" does not limit application of the regulation to any specific pollutant. However, as a practical matter, the emission standards relate primarily to smoke, particulate matter and sulfur oxides. Additional standards will be needed in the near future for fluorides, reactive solvents, and sulfur in fuels.

Regulation I has been in effect in King, Pierce and Snohomish Counties since March of this year. The impact of the regulation is just beginning to be felt by the citizen, by industry, and by the municipalities and county governments. Despite frequent emphasis in the newspapers and by announcements by our office on the plain fact that the control of air pollution will increase costs for the individual citizen and in some cases inconvenience him, it still comes as a disagreeable shock when the home owner is faced with a trash collection bill that he hadn't had to date. The new car owner probably has very little understanding of the exhaust control systems that Federal emissions regulations have required for his 1968 model car. While deploring unpleasant odors from Diesel buses, he is likely to vote down the expenditures of funds to plan a mass transportation system that would reduce the amount of motor vehicle traffic in the urban area.

Unless he is unfortunate enough to live next door to the town dump, the citizen's only concern is that his garbage and refuse be collected and taken out of his sight, and that his old

car is removed from his premises. He gives little thought to the ultimate disposal of his contribution to the problem until he is asked to pay for it. Regulation I and future standards for air pollution control will have an impact, and it is plain that we have a long road ahead in gaining acceptance by the individual citizen of direct costs and inconveniences that are readily apparent to the individual who pays the bill.

A surprising number of our large corporations have anticipated the adoption of local regulations by installing or planning extensive controls within the last few years. Those industries commanding sophisticated engineering staffs knowledgeable in the technicalities of air pollution control are, by and large, the ones that have already installed some controls.

The impact on municipalities and counties has been felt to the extent that they have been made aware of the need to improve solid waste disposal practices. It makes no sense to prevent householders from burning in a barrel in the backyard, if the only alternative is to haul the same waste to the town dump where it is then burned in bulk. The only reasonable approach to such a problem is to work with municipalities and county governments to phase out burning at their publicly-owned refuse sites, in order that the home owner will have a reasonable alternative to his present backyard burning. Fortunately, the City of Seattle and some other cities in the tri-county area are operating sanitary landfills or have access to such non-burning disposal sites. Indiscriminate outdoor burning is already restricted in these places or will soon be. In the remainder of the cases, planning, budgeting and arrangement for municipal services will take considerable time, but eventually the problem will have to be faced by all concerned. There are certain publicly-owned asphalt plants that will have to be controlled and negotiations are being carried forward by the Agency in this regard at this time.

School districts in Washington State are governmental entities separate from city or county government. We work directly with school districts primarily in connection with emissions from incineration and space heating. The impact of Regulation I on schools is generally reflected by increased studies

comparing costs of incineration with haul-away, and comparing costs of different fuels with air pollution control equipment costs. Many school districts are either on a compliance schedule now or in the planning stage necessary to estimate next year's budget needs for air pollution control.

It is generally conceded that Federal and State legislation is a must in order to make significant inroads on pollutants from motor vehicles. The Washington State Air Pollution Control Board has, by regulation, pre-empted the field of motor vehicle emissions control—hence the exemption in Regulation I relating to internal combustion engines. Although the control of motor vehicle exhaust is a legal responsibility of the State, this should not and—in our case—does not constitute a disclaimer of responsibility to cooperate with State and Federal control officials to the extent that we can in controlling this major component of the total air pollution problem.

It is often said that a piece of legislation does not really become law until it is successfully defended in the courts. If this is so, we will ultimately know the strength of our regulation, as a legal instrument. You are no doubt aware through the newspapers that the terms of the emission standards have been applied by the Agency in the case of the copper smelter in Tacoma. The smelter management has reacted by challenging the constitutionality of the regulation and the Washington Clean Air Act. Such cases are often protracted when carried to the courts, and we may not know the outcome for some time.

Meanwhile, we will carry on with the application of Regulation I, and any standards that we may develop in the near future. We know that in many instances an extended period of time is required for not only the design but the manufacture and installation of appropriate controls. The policy of our Agency is to consider evidence of significant progress toward a realistic compliance date as tantamount to compliance. We have, during our year of operation, been getting increased results from abatement patrol activities. Since Regulation I was adopted, control equipment valued at $2,485,000 was approval for installation by industry, and in no case has industry been forced to close because of Regulation I.

Much incineration is being discontinued in favor of "haul-away" solid waste disposal. Those who choose to continue incineration have been up-grading their incinerators at an encouraging rate. Our abatement patrol has been putting special emphasis on reduction of emissions from ships, medium to large industries, and large space heating plants.

It is worthy of mention that auto body burning in the three-county area has virtually ceased. An auto body fragmentizer has been in operation for a year in Pierce County, and another in King County for six months. It is not likely that these fragmentizers would have been built without the impetus of State and local air pollution control law.

To be successful, an urban air pollution control program of today calls for a regional approach implemented by a broad plan of action. Our plan is projected over three stages. The first stage comprises those measures that can be taken immediately without waiting for additional surveys or the development of new technology. It includes application of existing technology through compliance schedules to be met by specific operations that now result in substantial air pollution. The first stage is largely characterized by Regulation I, and its enforcement.

The second stage comprises those measures that can be made effective within two to five years. It involves improved air monitoring, elaboration of data reduction systems, abatement plans directed toward specific classes of pollutants, and development of emission standards not now covered by Regulation I.

The third stage is long range and comprises measures that may require more than five years to become effective. The measures and programs are of such a scope that our local Agency could not carry them out without the help and support of many other agencies at the local, State and Federal level. Among these measures are fully operational systems for disposal of total wastes, extension of pollution-free systems of transportation, recognition of the implications of land use plans in the control of air pollution, and the development of cooperative programs to meet future State and Federal air quality goals.

Regulation I gives the whole community a running start toward true air resource management for the region. Much of

it has been in effect elsewhere in the country, and has been shown to be achievable. My staff and I believe, individually and collectively, that with Regulation I the responsibility for air pollution control is ours, and that we can meet it.

I began by suggesting that, as members of a civilized society, we are in danger of civilizing ourselves—if not to death—at least into a life not much worth living. I have ended by describing the creation of another level of government in a world that sometimes seems overgoverned as it is, and by reporting on a regulation to add to those we already have. Somehow, this seems sad, but consider the alternative.

Some have warned that if the rate of population growth, industrial growth, automobile growth, and highway growth during the past twenty years continues for the next twenty years without air pollution control, most of the large cities in the United States will become uninhabitable. Much has been said in recent years about guaranteeing the rights of citizens. Included among those rights should be a guarantee of the right to breathe clean air.

CHAPTER FIVE
Responses—General Assembly Participation

1. INQUIRIES FROM THE FLOOR AND PANEL COMMENTS (EXCERPTS)

INQUIRY: What kind of legislative response are we getting to this problem of air pollution?

MIDDLETON: Air pollution is a problem which was first recognized by the Congress in 1955 when Senator Kuchel introduced the first bill. It was largely for research and development and assistance (in a technical way). In 1963 the Clean Air Act was conceived and it awarded for the first time to the Department of HEW the opportunity for air pollution control. The amendments of 1965-66 and particularly those in 1967 made it rather clear that the states were not responding to what the Congress had intended; namely, that the states assume the primary responsibility for air pollution control. The Clean Air Act was a very significant congressional move to lay a blueprint for action, which had a schedule of time compliance for specific pollutants so that the states in specified areas could become responsive to the need for air pollution control. As Senator Nelson very well put it: "The quality of the environment is getting pretty poor and its only in the last four or five years," I believe those are the words he used "that the Congress has given any appropriations to really step forward in this area." There is a long way to go. But there is a legislative approach. There is a blueprint. It is rather clear who has to pick up the ball. The National Air Pollution Control Administration is dedicated to seeing that the Clean Air Act gets implemented and we get the machinery going. There is a plan. There are some funds and now we need to have, may I say it, the participatory democracy of which you are a very important part. So let's not say do we need more laws, do we need more money. We have enough to

begin with and unless we pick up the ball and move, we're all going to be dead.

INQUIRY: Is it true that the cost of building and devising abatement facilities is such that the job should not be done and in particular is the steel industry so poor that it cannot afford the cost of beginning the program?

RIHM: The figures that I quoted this morning while they appear to be large are not so large when you take into consideration some of the costs relative to total capital investment. I did make the statement that to meet current air quality standards, in New York State anyway, it would involve 1.6 percent of total capital investment. We're talking peanuts as far as air pollution abatement facilities are concerned in relation to the total cost of the plant. I don't know whether this is the answer you wanted to your question but the investments, when these are spread out over the course of years, are relatively small for operating the air pollution control facilities.

SHEEHAN: I think when you first come to Washington and you hear those figures being quoted in millions and billions of dollars it sounds like a heck of a lot of money when our own salaries and wages are in terms of thousands of dollars. But I do think the easier figure to visualize is the additional 1.6 percent of total capital investment on the part of the industry for the abatement facilities.

INQUIRY: The question concerns some of the problems in the city of East Chicago, Indiana in particular the U. S. Reduction Plant and whether any assistance is available from the National Air Pollution Control Administration.

MIDDLETON: This is in partial response to the first question asked, "what are we doing about air pollution control." There has just now been designated a air quality control region in which East Chicago is located. That means the several counties in northwestern Indiana as well as those around the Chicago, Illinois area will now be joined together in a common air pollution program to deal with the quality of air which affects not only East Chicago but Chicago and the surrounding area on a regional approach. The states will develop standards which will

protect health and welfare. The states will develop implementation plans which are the emission strategies on how the air quality which is desired actually will be attained. This requires a control technique, an emission control, slowing down the amount of pollutants which are actually emitted. The development of the techniques or technology which are required to do that job are part of the responsibility of HEW along with the assistance of industry. We, therefore, as an administration, offer funds to local air pollution control agencies to assist them in their control effort. We also have funds which we give for technical assistance to areas to demonstrate how air pollution can be controlled. There is a research and development program which is designed specifically to abate air pollution from particular sources. So it is in our division of process control engineering that we have both people and research programs designed to give specific assistance to industry. So when the implementation plans come in and there may be the statement by industry that we can't control it because we don't have the know-how, it's up to us to see that where this know-how is that it's brought together so it can be used in that particular area. The assistance can come from State and local agencies which have practical knowledge of how to control these things. We attempt to bring this information together in order to make it available to these specific industries.

INQUIRY: The concentration standards in the criteria document which you have released—for sulphur dioxide for example—are at lower levels for the ambient air than the actual concentration in the plant.

MIDDLETON: I am very pleased that you have read the criteria document and you really got the essence of it. The document gives a lot of opportunity to the State and local government to select numerical controls which protects the health and welfare. I think the point you made is well taken; namely, the air pollution today in most places far exceeds the levels that are understood to have the initial adverse impact on health and welfare. People might quibble with you about whether there should be .04 concentration or .01 on an annual level. These are the decisions which people will have to make pretty soon in the State

areas. The problem is going to be one of relating the sources of pollution, specific places from which this crud comes, to what the outside air quality should be. And this is where the engineering skills, the technical know-how, the assistance from you people in identifying the sources comes in. We have an emission problem in controlling the pollutants so that the outside air gets down to the levels on an annual basis which are not injurious to health.

INQUIRY: How much lobbying activity has the industry engaged in at the Federal level to prevent the passage of adequate legislation in the area of air pollution?

MIDDLETON: There is always extensive lobbying in the halls of any legislative body to be sure that the industry concerned, or the segment of society concerned, has their ideas expressed to their representative. That's a normal healthy piece of business. What becomes unhealthy is specific legislation which in this case probably protects a particular source of pollution. I think the Clean Air Act of 1967 represents the ultimate in lobbying by many industries. The Administration introduced the bill in January, 1967. The bill, as it was reported out and signed by the President in November, 1967, allowed for much interplay. What is important to remember is the Clean Air Act was unanimously passed by both the House and the Senate. So whatever the inputs were from industry, they were put there because industry was willing to deal with air pollution as a regional problem whereby they could deal directly with the state, county, and city governments in expressing their particular views. The safeguards for the stronger standard for the cities, counties and states is the fact that the federal government will decide what pollutants need to be controlled and will suggest to what extent they should be controlled. The fact that there is a federal review offers the assurance that the implementation plans which are developed, will in fact attain the proper goals. So the lobbying was significant particularly by the coal and oil industries, to see that fuels would continue to be used for the development of heat and power. As a matter of policy, the National Air Pollution Administration favors the full use of our coal and oil resources for the development of heat and power. What we are saying is that we can have heat and power, use coal and oil, make steel,

and at the same time control air pollution. The regional approach provides the forum to do this. But whether its going to be good or bad depends upon your participation.

2. SUMMARY—GENERAL ASSEMBLY (EXCERPTS)

John J. Sheehan, *Legislative Director*
United Steelworkers of America

I attended a number of workshop sessions and talked to all of the chairmen. We tried to capture a few of the comments which were made in each of these workshops. I would do an injustice to think that I could report the sum total of the comments which were made. In anticipation of some of the observations which you might make about this conference, I reread a speech which Senator Muskie made on this issue of the development of pollution abatement regulations. It responds to many of the comments which I heard in all of the workshops. I will briefly read those sections which refer to participatory democracy. That's a nice sounding term. It can mean a lot of things. In this particular case it really means that there is not going to be any action on these air quality standards unless the local community itself does something about it. Many of us have been committed to a political policy which maintains that the local governments are unable to handle great social problems. There was inclination to want to pass those problems on to the next guy. Within our own union, we say the International ought to do it or the staff ought to do it. Within our government, we say the Federal Government ought to be responsible. So we support Federal legislation. We don't always succeed in getting that Federal legislation. The Air Quality Act is a case in point. It is not a completely Federally administered law. We got one foot in the door on the Federal side. However, the other foot is planted squarely on the side of the local community. Hence, we may not have a law with which we might feel comfortable. We don't have a regulatory process which will operate automatically. We have rather a procedure in which we will have to participate. Only then will we have the law to back us up. What does Muskie say about this aspect of the new law: "In

this legislation, as in legislation dealing with water pollution, we have established a national policy, but we have placed the primary responsibility for dealing with it in the hands of State and local levels, both government and non-government. I suppose there are cynics who will argue that the Air Quality Act, in placing so much emphasis upon the development of these kinds of commitments, runs against the lessons of history since the lessons of history in our Federal system is that State and local governments and local groups increasingly tend to slough off responsibility for dealing with public problems until there is no recourse except to national policy, national agencies and national enforcement." Now I think from the comments which I have heard that many of you are already convinced that the local involvement will not produce the results, and some have made recommendations that we ought to go even further with Federal legislation in this area. As a legislative representative of the Union, I would agree with you. We will have to fight for stronger Federal control. Somebody inquired the other day as to what the industry has done in Washington in terms of this legislation. I was going to bring over with me the reprints of the public hearings on this law, the stack of which is very high. The industry representatives have been here. They have testified and they won at least to the extent that the emission standards to control air pollution must be developed by your local government and your local communities. If that doesn't succeed then we will try for further Federal legislation. But the point I want to make is that we did not succeed when we had a good Congress and when we had a receptive Federal administration in the White House. So let's face it, politically we are less strong today than we were then. Even then we failed and we got this type of compromise. Therefore, I am emphasizing here that this is the only tool we have and if you want it to work don't say that the tool should have been Federal—it should have been. Nevertheless, here is a tool which you have and you might be able to make it succeed. We will strive for further Federal legislation. Here's how Senator Muskie comments. He is challenging all of us. He says: "If the public welfare becomes in the future what it has so often been in the past, that is the concern on a daily basis of only those

who are elected to public office or those who hold appointive office in government, then we can indeed be concerned about the future of participatory politics in the American system. The public has been concerned in the past only on a crisis basis." I heard one of the delegates in the workshop speak about the Donora situation. He gave a very emotional description of the eerie atmosphere which descended upon that city in the midst of that air pollution tragedy. But that was a crisis situation. But since the crisis was twenty years ago, it has no impact upon the pollution situation which exists today, twenty years later. We could still have an inversion which took place in Donora in 1949. But are we going to react only after there's a crisis? Muskie thinks maybe in the past that's the only time we reacted. "When problems emerged to the point where they threatened enough people or the right groups of people, or touched upon the personal concern and sensitivities of enough people, then the public responded and the first response had been: Well, somehow our public institutions have failed, or somehow our public policies have been inadequate. Rarely do they respond with self-accusation: Well, somehow we have fallen short in our concern for the public welfare as against our own personal interest." I'm emphasizing that statement of the Senator because that is the kind of challenge we face not only in the field of air and water pollution but with respect to all of our problems. I think we have reached the point where we can no longer deal with them on a crisis basis. Now with regard to this particular legislation, to this particular problem of air pollution, we have stirred not only interest in it, we have also stirred alarm. But that alarm should generate action in your own area. I cannot overemphasize that. The International Union cannot do the type of job at the local level which you can do. That local level responsibility must be grabbed a hold of by local union officers and members. Here's the area where you can really get involved.

Now how do you get involved. A number of suggestions have been made. (1) First of all let me indicate that the regional air pollution control can inform you concerning activities in your area. These representatives have been attending the conference. I hope that you have made contact with them. You should be

on their mailing list so that you will personally be aware of the activity which is going on in your particular community. (2) Another suggestion is that we ought to place a notification in *Steel Labor* of the public hearings which will be taking place regarding the development of the air quality standards. In this way you can be involved in your community's attempt to arrest air pollution. To emphasize that idea a little more, I do not think that the purpose of bringing you here was merely to say that there is a problem. Of course there is a problem in air pollution. But we are trying to drive through the idea that you have to do something about that problem and unfortunately that means local pressure. I say unfortunately because it means individual activity at the local level. It's not just a Federal enforcement procedure. But now that you know that the only way you are going to get results is that you must move the local agencies. And at this point I throw in a note of caution and that caution is simply this: we should not be bamboozled by the industry into supporting delaying action. When the flag is down, when the ball game begins, and we really start talking turkey in terms of the emission standards, the industry will be approaching us or the community officials. They will say that they need our help to modify or delay the emission standards because strong air quality standards will put people out of work. What we're saying at this conference is don't be immediately impressed by that appeal. Check it out first with your local air quality enforcement offices. Find out what the actual facts are concerning costs. If they are talking about a 1.6 percent financial cost to the industry, that doesn't sound like a tremendous amount of money. It may sound large in terms of millions of dollars but this is not an industry that operates on millions of dollars. It's up in the billions. Furthermore, when air quality control officers are talking about emission standards I hope, as a result of this conference, that you realize that such standards are going to be based upon existing technology and the economic feasibility. They are not asking for the millenium. They are asking for something that is reasonably within the grasp of the industry to produce. One of the workshop chairmen put it more sharply. He said: "We have approached industries in the past during

collective bargaining and maintained that if they can't pay a living wage, if they can't pay what we're reasonably asking for during the negotiations, we would go on strike with the industry." That's something that you are personally familiar with. That's something upon which you are really able to make a judgment even to the extent of striking the industry. Well now why should your enthusiasm, why should your aggressiveness now begin to wane in this area when the same kind of argument is being made in relation to the cost of putting in these abatement facilities? What I am saying to you is don't be overly swayed. Check it out with the air pollution agencies in your particular vicinity. I think your presence here today, and yesterday, may have started something going in this Union and if you started it I think you should drive through and keep demanding more in order to get some results. (3) I hope the summer institute programs could draw upon the resources of the National Air Pollution Control Agency to be part of the programs. I will check this out with the Education Department.

Furthermore, it is of the utmost importance that you participate in the *public hearings* at which the precise air pollution control standards to be issued by the state governor in response to the federal law, will be evaluated. There will be a great deal of pressure upon the governors to modify air quality standards. At the public hearings you will have a chance to demand stricter standards. But if the public is not represented the likelihood of strong standards will be very dim. There is no need to be awed by the scientific data which will be presented at the hearings. In the final analysis, there will be a simple equation: at a *specific level* of concentration of pollutants (to be established by the governor's standard) there will be a *certain degree of adverse impact* upon health and property. You should find out the health price which will be paid for the concentration level to be recommended by the governor. When you know that, you should be able to express your views as to whether it is an acceptable price.

In preparation for the public hearings you should:

1. *Seek out other groups* in your community who would be obviously concerned about air pollution, for instance,

Tuberculosis Association, Conservation Foundation, League of Women Voters, County Health Offices, other labor unions and local labor federations.

2. Recommend that a *local workshop be held* by such a coalition so that you might become familiar with the procedural details of the Act when your community is designated. Some of the groups mentioned above are conducting such conferences. Representatives of the National Air Pollution Control Administration are available as resource persons.
3. Contact regional and state personnel of the *air pollution control agencies* concerning activities in your area: when will your area be designed; are there any workshops being held.
4. Determine whether in the local *academic and professional community* there are professors and doctors who will join you in preparation for the public hearings.

It is of the utmost importance that a public record of concern be made at the public hearings. Upon that record will depend the strictness of the standards.

ADJOURN

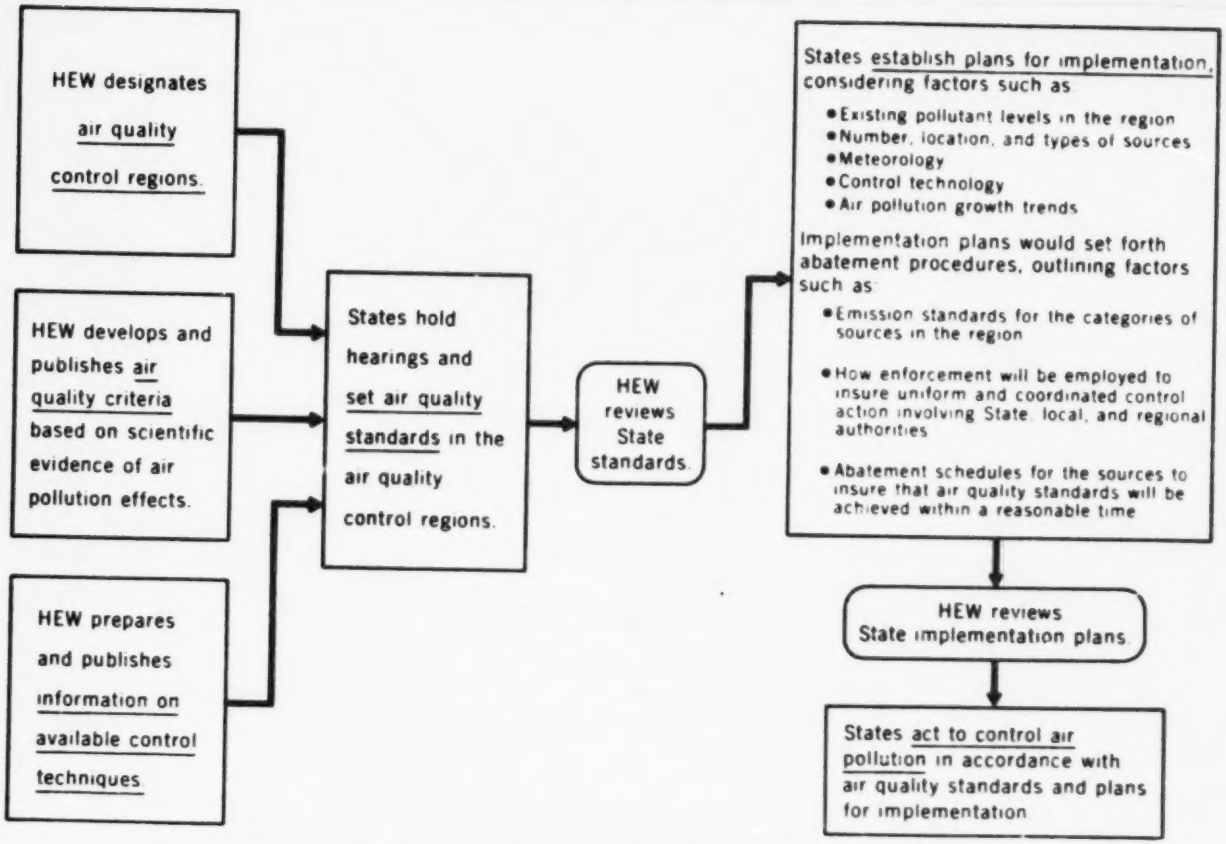
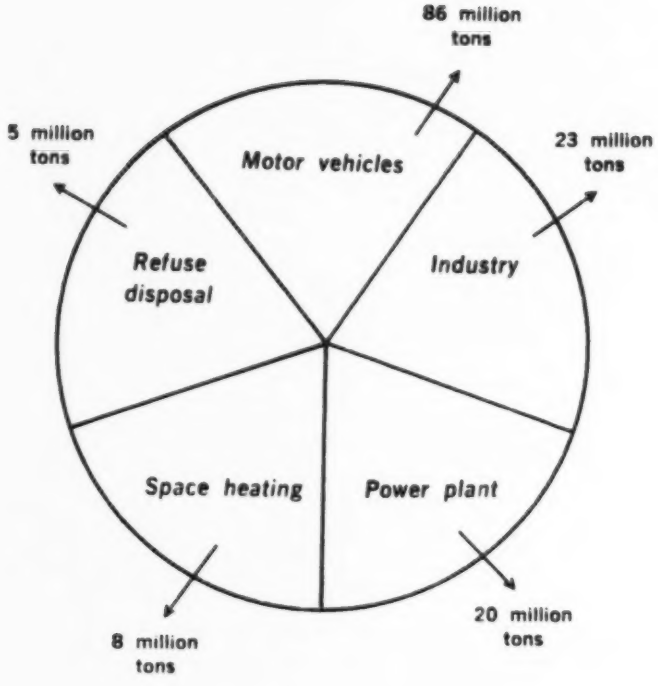

HEW designates air quality control regions.
HEW develops and publishes air quality criteria based on scientific evidence of air pollution effects.
HEW prepares and publishes information on available control techniques.
States hold hearings and set air quality standards in the air quality control regions.
HEW reviews State standards.
States establish plans for implementation, considering factors such as
• Existing pollutant levels in the region
• Number, location, and types of sources
• Meteorology
• Control technology
• Air pollution growth trends
Implementation plans would set forth abatement procedures, outlining factors such as:
• Emission standards for the categories of sources in the region
• How enforcement will be employed to insure uniform and coordinated control action involving State, local, and regional authorities
• Abatement schedules for the sources to insure that air quality standards will be achieved within a reasonable time
HEW reviews State implementation plans.
States act to control air pollution in accordance with air quality standards and plans for implementation.

Figure 3. Flow diagram for State action to control air pollution on a regional basis.



142 MILLION TONS

UNITED STEELWORKERS OF AMERICA
AFL-CIO-CLC

I. W. ABEL
President

WALTER J. BURKE
Secretary-Treasurer

JOSEPH P. MOLONY
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